

JAMES C. HERMANSON

Curriculum Vitae Highlights

Department of Aeronautics & Astronautics
316E Guggenheim Hall
Box 352400
Seattle, WA 98195

Phone: (206) 616-2310
Fax: (206) 543-0217
Email: jherm@aa.washington.edu

EDUCATIONAL HISTORY

California Institute of Technology, Pasadena, CA

Doctor of Philosophy, Aeronautics

1985

Dissertation: Heat Release Effects in a Turbulent, Reacting Shear Layer

California Institute of Technology, Pasadena, CA

Master of Science, Aeronautics

1980

University of Washington, Seattle, Washington

Bachelors of Science, Aeronautics & Astronautics (Magna Cum Laude)

1977

EMPLOYMENT HISTORY

University of Washington

Seattle, Washington, USA

Associate Department Chair, Department of Aeronautics & Astronautics

1/09 – Present

Professor, Department of Aeronautics & Astronautics

9/08 – Present

Associate Professor, Department of Aeronautics & Astronautics

8/02 – 8/08

Worcester Polytechnic Institute

Worcester, Massachusetts, USA

Professor, Mechanical Engineering Department

7/02

Associate Professor, Mechanical Engineering Department

7/97-6/02

Assistant Professor, Mechanical Engineering Department

3/95-6/97

University of Connecticut

Storrs, Connecticut, USA

Visiting Associate Professor, Department of Mechanical Engineering

1/93-6/93

United Technologies Research Center

East Hartford, Connecticut, USA

Research Scientist, Chemical Sciences

7/88-3/95

University of Washington Applied Physics Laboratory

Seattle, Washington, USA

Senior Engineer, Ocean Systems

2/86-7/88

Research Assistant Professor, Department of Aeronautics and Astronautics

1/87-7/88

Universität Göttingen

Göttingen, Germany

Research Fellow, Institut für Physikalische Chemie

7/85-12/85

California Institute of Technology
Pasadena, California, USA
Graduate Research Assistant, Aeronautics

6/80-6/85

Boeing Aerospace Company
Seattle, Washington, USA
Engineer, Propulsion Technology

7/77-7/79

RESEARCH INTERESTS

Fluid mechanics (compressible flow, multi-phase flow, heat transfer) and combustion (flame structure, flame stability, and exhaust emissions).

AWARDS AND HONORS

- Best Paper Award, *18th Microgravity Science and Space Processing Symposium*, January 2004, 42nd AIAA Aerospace Sciences Meeting.
- *Professor of the Year* Nomination, 2004, University of Washington Department of Aeronautics and Astronautics.
- Boeing Professorship in Aeronautics and Astronautics, University of Washington, 2002-2005.
- Curriculum Innovation Award - Honorable Mention, 2001, American Society of Mechanical Engineers.
- Russel M. Searle Instructorship in Mechanical Engineering, Worcester Polytechnic Institute, 2001.
- Fellow, 2000, American Society of Mechanical Engineers.
- Associate Fellow, 1999, American Institute of Aeronautics and Astronautics.
- WPI George I. Alden Chair in Engineering, 1999, Worcester Polytechnic Institute.

AFFILIATIONS AND OTHER APPOINTMENTS

Adjunct Assistant Professor, Department of Mechanical Engineering, University of Washington, 2003-present.

PUBLICATIONS

(last ten years)

1. Fregeau, M., Hermanson, J.C., Stocker, D.P., and Hegde, U.G., "Turbulent Structure Dynamics of Buoyant and Non-buoyant Pulsed Jet Diffusion Flames," submitted to *Combustion Science and Technology*, submitted 2009.
2. Fregeau, M. and Hermanson, J.C., "NO_x/CO Emissions of Strongly-Pulsed Jet Diffusion Flames," *Combustion Science and Technology*, in press, 2009.
3. Kimball, J.T., Bailey, M.F., and Hermanson, J.C., "Ultrasonic measurement of condensate film thickness," *Journal of the Acoustical Society of America* **124** (4), EL196-202, 2008.
4. Hermanson, J.C., "Dynamics of Supersonic Droplets of Volatile Liquids," *AIAA Journal* **45** (3), 730-733, 2007.

5. Som, S.M., Kimball, J.T., Hermanson, J.C., and Allen, J.S., "Stability and heat transfer characteristics of unsteady condensing and evaporating films," *International Journal of Heat and Mass Transfer* **50**, 1927-1937, 2007.
6. Chen, Z.-Q., Hermanson, J.C., Shear, M.A., and Pedersen, P.C., "Ultrasonic Monitoring of Interfacial Motion and Growth of Condensing and Non-condensing Liquid Films," *Flow Measurement and Instrumentation* **16** (6), 353-362, 2005.
7. Hermanson, J.C., Johari, H., Stocker, D.P., and Hegde, U.G., "Buoyancy effects in strongly-pulsed turbulent diffusion flames," *Combustion and Flame* **139**, 61-76, 2004.
8. Hermanson, J.C., Ghaem-Maghami, E. and Johari, H., "CO/Unburned Hydrocarbon Emissions of Strongly-Pulsed Turbulent Diffusion Flames," *Combustion Science and Technology* **176**, 1855-1866, 2004.
9. Tew, D.E., Hermanson, J.C., and Waitz, I.A., "Impact of Compressibility on Mixing Downstream of Lobed Mixers," *AIAA Journal* **42** (11), 2393-2396, 2004.
10. Hermanson, J.C., Sangras, R., Usowicz, J.E., and Johari, H., "Co-Flow Effects on Turbulent Flame Puffs," *AIAA Journal* **40** (7), 1355-1362, 2002.
11. Olinger, D.J. and Hermanson, J.C., "Integrated Thermal-Fluid Experiments in WPI's Discovery Classroom," *ASEE Journal of Engineering Education* **91** (2), 239-243, April 2002.
12. Obata, S., and Hermanson, J.C., "Numerical Simulation of Shock-enhanced Mixing in Planar, Non-uniform density, Turbulent Jets," *AIAA Journal* **38** (11), 2113-2119, 2000.
13. Hermanson, J.C., Dugnani, R., and Johari, H., "Structure and Flame Length of Fully-modulated, Turbulent Diffusion Flames," *Combustion Science and Technology* **155**, 203-225, 2000.
14. Hermanson, J.C. and Cetegen, B.M., "Shock-Induced Mixing of Nonhomogeneous Density Turbulent Jets," *Physics of Fluids* **12** (5), 1210-1225, 2000.
15. Pedersen, P.C., Cakareski, Z., and Hermanson, J.C., "Ultrasonic Monitoring of Film Condensation," *Ultrasonics* **38**, 486-490, 2000.
16. Johari, H., Pacheco-Tougas, M., and Hermanson, J.C., "Penetration and Mixing of Fully-modulated Turbulent Jets in Crossflow," *AIAA Journal* **37** (7), 842-850, 1999.

INVITED LECTURES AND SEMINARS

(last ten years)

1. ASME International Mechanical Engineering Congress, "Successful Proposal Writing I," November 2007.
2. Rutgers University, "Turbulent Structure and Emissions of Strongly-Pulsed Diffusion Flames," November 2007.
3. Seattle Astronomical Society, "Tracking Geosynchronous Satellites," June 2007.
4. University of Washington Department of Mechanical Engineering, "Structure and Emissions of Strongly-Pulsed Turbulent Diffusion Flames in Normal- and Microgravity," April 2007.
5. Technische Universität Berlin, "Large-scale Structure Dynamics and Emissions of Strongly-Pulsed Turbulent Diffusion Flames in Normal- and Microgravity," November 2006.
6. NASA Glenn Research Center, "Strongly-Pulsed Turbulent Diffusion Flames in Normal- and Microgravity," September 2006.

7. California Institute of Technology, "Structure and Emissions of Strongly-Pulsed Turbulent Diffusion Flames in Normal- and Microgravity," April 2006.
8. Penn State University, "Strongly-Pulsed Turbulent Diffusion Flames in Normal- and Microgravity," April 2005.
9. University of California, San Diego, "Buoyancy Effects and Emissions in Strongly-Pulsed, Turbulent Diffusion Flames," October 2004.
10. Zentrum für angewandte Raumfahrttechnologie und Mikrogravitation (ZARM), Universität Bremen, Germany, "Fully-Modulated, Turbulent Diffusion Flames in Microgravity and Normal Gravity," May 2002.
11. Universität Stuttgart, Germany, "I. Fully-Modulated, Turbulent Diffusion Flames in Microgravity and Normal Gravity, II. The Interaction of Normal Shock Waves with Turbulent, Non-constant Density Jets," May 2002.
12. Technische Universität Darmstadt, Germany, "I. Fully-Modulated, Turbulent Diffusion Flames in Microgravity and Normal Gravity, II. The Interaction of Normal Shock Waves with Turbulent, Non-constant Density Jets," May 2002.
13. Deutsches Zentrum für Luft und Forschung, Lampholdshausen, Germany, "I. Fully-Modulated, Turbulent Diffusion Flames in Microgravity and Normal Gravity, II. The Interaction of Normal Shock Waves with Turbulent, Non-constant Density Jets," May 2002.
14. North Carolina State University, "Fully-Modulated, Turbulent Diffusion Flames in Microgravity and Normal Gravity," May 2002.
15. NASA Glenn Research Center, "Flame Length and Turbulent Structure of Fully-Modulated, Jet Diffusion Flames in Microgravity and Normal Gravity," October 2001.
16. University of Washington A&A Department, "I. The Interaction of Weak, Normal Shock Waves with Turbulent, Non-constant Density Jets, II. Combustion Characteristics of Fully-Modulated, Turbulent Diffusion Flames in Reduced Gravity, III. Disruption of Fuel Droplets in Supersonic Flow," April 2001.
17. University of Washington A&A Department, "The Interaction of Weak Normal Shock Waves with Turbulent, Non-constant Density Jets (also, Some Microgravity Combustion Research)," May 2000.

Professional society memberships

- American Institute of Aeronautics and Astronautics (*Associate Fellow* 1999) 1977-present
- American Society of Mechanical Engineers (*Fellow* 2000) 1984-present
- American Physical Society 1996-present