

# MECHANICAL ENGINEERING

OREGON STATE UNIVERSITY

College of Engineering

**ADAMS, Ronald L.**  
Professor  
Dean of Engineering

**BIRTH DATE**  
April 21, 1948

## DEGREES

B.S., Mechanical Engineering, Oregon State University, 1970  
S.M., Aeronautics and Astronautics, Massachusetts Institute of Technology, 1971  
Ph.D., Mechanical Engineering, Oregon State University, 1977

## ACADEMIC POSITIONS

Instructor, Oregon State University, 1976-1977  
Assistant Professor, Oregon State University, 1979-1983  
Associate Professor, Oregon State University, 1983-1986  
Dean of Engineering, Tenured Professor, 1998-present

## NON-ACADEMIC POSITIONS

MIT, Aerophysics Laboratory, 1972  
USAF Space and Missile Systems Organization, 1972-1975  
MIT Lincoln Laboratory, 1977-1979  
Tektronix Laboratories:  
Leader of the Ink Jet Physics Group, 6/84 – 8/84  
Manager of Hard Copy Research, 8/84 – 9/86  
Manager of Hard Copy and Graphics Systems, 9/86 – 3/87  
Tektronix, Inc. – Color Printing and Imaging Division:  
R&D Manager then Director of R&D and Senior Tektronix Fellow, 3/87 – 8/95  
Vice President of Technology and Senior Tektronix Fellow, Member of Corp. Technology Management Council, 8/95 – 8/98  
Consultant to:  
MIT Lincoln Laboratory, 1979-1980  
Lindauer River Ranch, 1982-1983  
Tektronix, Inc., 1982-1984

## FIELDS OF SPECIALIZATION

Fluid Mechanics  
Aerodynamics  
Fluidized Bed Heat Transfer

## PROFESSIONAL ACTIVITIES

### Registration

State of Oregon, No. 11,614, Mechanical P.E.

### Professional Societies

American Society of Mechanical Engineers: Treasurer of Willamette Valley Section, 1983-1984  
Society for Imaging Science and Technology: Fellow, 2000-present

### **Professional Recognition**

Sigma Xi  
Phi Kappa Phi  
Sigma Tau  
Tau Beta Pi  
Phi Eta Sigma  
Reviewer for:

*Journal of Heat Transfer*  
*AIChE Journal*  
NSF (Heat Transfer Division)  
*International Journal of Powder Technology*  
ASME (Heat Transfer Division)  
*International Journal of Heat and Mass Transfer*  
National Research Council, National Academy of Science and Engineering, 1987, 1993  
Fellow, Imaging Science and Technology, 2000

### **Committees, Commissions, and Boards**

Member, Mechanical Engineering Industrial Advisory Board: 1992-1998  
Member, ARPA MEMS Ind. Study Panel  
Member, Corp Advisory Com., for Society of Imaging Science and Technology: 1996-1998

## **PUBLICATIONS**

### **Books**

“Gas Convection and Unsteady Conduction in Fluid Bed Heat Transfer,” Chapter 23 of *Handbook for Heat and Mass Transfer Operations*, N.P. Chermisinoff, Ed., Gulf Publishing, 1986.

### **Technical Journals**

“A Gas Convection Model of Heat Transfer in Large Particle Fluidized Beds,” (with J.R. Welty), *AIChE Journal*, Vol. 25, No. 3, 395-405, May 1979.  
“Development of an Unconventional Re-Entry Configuration for Decoy Applications,” *Journal of Defense Research*, Vol. 12, No. 1, Spring 1980  
“An Approximate Formula for Gas Convection Dominant Heat Transfer in Large-Particle Fluidized Beds,” *Journal of Heat Transfer*, Vol. 103, No. 2, May 1981.  
“Extension of the Adams-Welty Fluid Bed Heat Transfer Model to the Packed Bed Case,” *Journal of Heat Transfer*, Vol. 103, No. 3, August 1981.  
“An Unsteady Potential Flow Model of Bubble-Induced Particle Motion Near a Horizontal Tube in a Fluidized Bed,” *Powder Technology*, Vol. 3, No. 2, 1981.  
“An Analytical Study of Bubble and Adjacent Tube Influence on Heat Transfer to a Horizontal Tube in a Gas Fluidized Bed,” (with J.R. Welty), *Journal of Heat Transfer*, Vol. 104, No. 1, 1982.  
“An Exact Solution for the Inviscid Flow Field Within a Two-Dimensional Bubble Contacting a Horizontal Tube in a Gas Fluidized Bed,” *Chem. Engrg. Sci.*, Vol. 37, No. 9, 1982.  
“An Approximate Model of Bubble Phase Convective Heat Transfer to a Horizontal Tube in a Large Particle Fluid Bed,” *J. of Heat Trans.*, Vol. 104, August 1982.  
“Coupled Gas Convection and Unsteady Conduction Effects in Fluid Bed Heat Transfer Based on a Single Particle Model,” *Int. J. Heat Mass Transfer*, Vol. 25, No. 12, 1982.  
“Heat Transfer in Large Particle Bubbling Fluidized Beds,” *J. of Heat Transfer*, Vol. 106, No. 1, February 1984.  
“Radiation View Factors Between Axisymmetric Subsurfaces within a Cylinder with Spherical Center Body,” (with B. Mahbod), *J. of Heat Transfer*, Vol. 106, No. 1, February 1984.  
“Improving Drying Uniformity in Concurrent Flow Tunnel Dehydrators,” (with J.F. Thompson), *Transactions ASAE*, Vol. 28, No. 3, 1985.

- “Drop Formation Characteristics of Drop-on-Demand Jets,” (with J. Roy), *Journal of Imaging Science*, Vol. 29, No. 2, 1985.
- “A One-Dimensional Numerical Model of Drop-on-Demand Ink Jet,” (with J. Roy), *Journal of Applied Mechanics*, Vol. 53, No. 1, 1986.
- “Local Heat Transfer Coefficients for Horizontal Tube Arrays in High-Temperature Large-Particle Fluidized Beds: An Experimental Study,” (with A. Goshayeshi, J.R. Welty, and N. Alavizadeh), *Journal of Heat Transfer*, Vol. 108, November 1986.
- “Some Notes on Ink-Jet Printhead Design,” (with D. Elger), in *Industrial Applications of Fluid Mechanics*, ASME, NY, 1987.
- “Dynamic Hot-Wire Anemometer Calibration Using an Oscillating Flow,” (with D. Elger), *J. Phys. E: Sci. Instrum.*, Vol. 22, pp. 166-172, 1989.
- “An Experimental Study of Oscillating Flow Through Two Orifices in Series,” (with D. Elger), *Journal of Acoustical Society of America*, Vol. 85, No. 3, March 1989.
- “Two-Dimensional Modeling of the Hydrodynamics of Gas Fluidized Beds,” (with Y. Wang), *Ind. Eng. Chem. Res.*, Vol. 28, No. 3, March 1989.
- “An Instrument for Local Radiative Heat Transfer Measurement in a Gas Fluidized Bed at Elevated Temperature,” (with N. Alavizadeh, J.R. Welty, and A. Goshayeshi), *Journal of Heat Transfer*, Vol. 112, No. 2, 1990.
- “The Printing Technology of the Tektronix Phaser (R) 340,” *Imaging Science and Technology*, 1997.

#### **Conference Proceedings**

- "Heat Transfer in Large Particle Bubbling Fluidized Beds," ASMEJSME Thermal Engineering Conference, March 1983.
- "A Model of the Radiative Contribution to Heat Transfer in a High-Temperature, Large-Particle Gas Fluidized Bed", (with B. Mahbod), ASME/AIChE National Heat Transfer Conference, August 1984.
- "An Instrument for Local Radiative Heat Transfer Measurement in a Gas Fluidized Bed at Elevated Temperatures", (with N. Alavizadeh, J.R. Welty, and A. Goshayeshi), ASME/AIChE National Heat Transfer Conference, August 1984.
- "Air Flow Effects on Drop Formation for Air-Assisted Drop-on-Demand Ink Jets", (with J. Roy) to be presented at Society for Information Display International Symposium, June 1984.
- "Drop Formation Characteristics of Drop-on-Demand Jets", (with J. Roy) to be presented at Society of Photographic Scientists and Engineers 37th Annual Conference, May 1984.
- “An Experimental Study of Heat Transfer in an Array of Horizontal Tubes in Large Particle Fluidized Beds at Elevated Temperatures,” (with A. Goshayeshi, J.R. Welty, and N. Alavizadeh), ASME/AIChE National Heat Transfer Conference, August 1985.
- “Pressure Generation in Drop-on-Demand Ink Jets,” (with J. Roy and J. Anderson), Society for Information Display International Symposium, May 1985.
- “The Effect of Air Chamber Geometry on DOD Ink Jet Performance,” (with J. Roy), Society of Photographic Scientists and Engineers 38<sup>th</sup> Annual Conference, May 1985.
- “The Influence of Ink Chamber Acoustics on Drop Formation in DOD Jets,” (with J. Roy), SPSE 38<sup>th</sup> Annual Conference May 1985.
- “Radiative Heat Transfer Measurement of a Horizontal Tube Immersed in Small and Large Particle Fluidized Beds,” (with N. Alavizadeh, Z. Fu, J.R. Welty, and A. Goshayeshi), International Symposium on Heat Transfer, Beijing, PRC, October 1985.
- “Fluid Pressure and Meniscus Motion in a Drop-on-Demand Ink Jet System,” (with J. Roy), Third International Congress on Advances in Non-Impact Printing Technologies, August 1986.
- “An Experimental Study of the Acoustic Impedance and Fluid Mechanics of Two Orifices in Series,” (with D. Elger), Acoustical Society of America, December 1986.
- “Dynamic Hot Wire Calibration in an Oscillating Flow,” (with D. Elger), American Physical Society Division of Fluid Mechanics Winter Meeting, November 1987.
- “Some Notes on Ink-Jet Printhead Design,” (with D. Elger), ASME Winter Annual Meeting, December 1987.

- “The Effect of Surface Wetting on Drop-on-Demand Ink Jet Performance,” (with J. Roy), Fourth International Congress on Advances in Non-Impact Printing Technologies, March 1988.
- “Fluidic Crosstalk in a DOD Ink Jet – A Theoretical Model,” (with J. Roy), Japan hard Copy '88, Tokyo, May 1988.
- “Air-Drag Effect on Performance of Drop-on-Demand Ink Jets,” (with J. Roy), Fifth International Congress on Advances in Non-Impact Printing Technologies, November 1989.
- “Phase Change Ink Jet Technology,” invited focus paper presented at the Ninth International Congress on Advances in Non-Impact Printing Technologies, Tokyo, October 1993.
- “The Printing Technology of the Tektronix Phaser (R) 340,” presented at the Eleventh International Congress on Advances in Non-Impact Printing Technologies,” Hilton Head, October 1995.

### **Reports & Others**

- "Non-Equilibrium Expansion of Viscous Radiating Argon Plasma," S.M. Thesis, MIT, 1971.
- "Wind Tunnel Simulation of Store Jettison With the Aid of Magnetic Artificial Gravity," (with T. Stevens), NASA CR-1955, February 1972.
- "Preliminary Aerodynamic Analysis of Unconventional Re-Entry Vehicles," MIT Lincoln Laboratory Report PA-276, October 1972.
- "Effect of Alleviating Ablative Materials on High Power Microwave Transmission Through the Plasma Sheath," (with C. Haldeman and J.B. Coffin), AFCRLTR-73-0147, February 1973.
- "An Analytical Model of Heat Transfer to a Horizontal Cylinder Immersed in a Gas Fluidized Bed," Ph.D. Thesis, OSU, 1977.
- "A Theory of Rectified Diffusion in Ink Jets," Tektronix proprietary report, February 1990.

### **PATENTS**

- “Air-Assisted Single Fluid Chamber Ink Jet,” (with Le, Roy, Anderson, and Oswald), U.S. Patent 4,728,969, May 1988.
- “Method of Operating an Ink Jet to Reduce Print Quality Degradation Resulting from Rectified Diffusion,” (with Roy, Stanley, and Buehler), U.S. Patent 5,155,498, October 1992.
- “Method of Operating an Ink Jet to Reduce Print Quality Degradation Resulting from Rectified Diffusion,” (with Roy, Stanley, and Buehler), U.S. Patent 5,381,162, continuation of 5,155,498, January 1995.
- “Ink Jet Printer Architecture and Method,” (with Bradford, Burke, Hoffman, Gilbert, Rise, and Van Horne), U.S. Patent 5,455,604, October 1995.
- “Method and Apparatus for Producing Dot Size Modulated Ink Jet Printing,” (with Burr, Tence, Le, and Mutton), U.S. Patent 5,495,270, February 1996.