

Joseph C. Mollendorf  
**Curriculum Vitae**  
9 August 2015

### **Present positions, address and contact information**

SUNY Distinguished Teaching Professor  
Mechanical and Aerospace Engineering  
Supervisor of Engineering Machine Shop

Department of Mechanical and Aerospace Engineering, 335 Jarvis Hall  
University at Buffalo, The State University of New York  
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### **Areas of activity in teaching and research**

- Senior capstone design course - "Assistive Devices for Persons with Disabilities"; 22 years NSF funding; students were required to make a working prototype and publish a report with photos; over 442 devices were made by over 706 students; recent projects include: "Special Bicycle for Purple Heart Amputee" and "Head-Mounted Paint Brush for a Quadriplegic". Students designed (individually or in teams) a customized assistive device for a person with a specific disability. The "client" could be a friend or relative or from local organizations such as Aspire of Western New York. The budget for materials and supplies for each project was provided by an NSF grant, "Undergraduate Projects to Aid Persons with Disabilities" or MAE Department funding. Students were required to come-up with their own project ideas within the first week of the semester long effort. The course was taught during both the Fall and Spring semesters for over 22 years. Budget estimates and completion schedules (Gant charts) were required and reviewed during the weekly student class presentations. Students were taught accountability and responsibility by requiring a weekly PowerPoint presentation wherein students described their progress and reviewed (and revised) their schedules and budgets. Students were required to produce a working prototype and file a patent disclosure with UB STOR to give them experience with intellectual property. A final report was required with specific NSF format and photographs that was published by the NSF. Students report (unsolicited feedback) that this class and the required published final report helped them at job interviews and later in their careers.
- Engineering Machine Shop Supervisor; complete shop inventory, clean-out, upgrade and renovation; purchased \$300K in modern computer controlled (CNC) equipment including a 3-D printer for student use; laid-out and outfitted new Student Shop for experiential learning; designed and organized an experiential learning machine shop course where students make their own hammer from raw metal stock using a lathe and a milling machine; planned and arranged for new student paint booth.

- New senior elective course that synthesizes: heat transfer, fluid mechanics and thermodynamics by using real-world design scenarios in industry and research. Topics for student take-home exams are taken from a current research project funded by NYSERDA on an actual wood-burning hydronic heater in the combustion lab in Jarvis Hall
- Faculty advisor for AIAA "Design, Build and Fly" international student competition.
- Wood stove student design challenge competition funded by very recent NYSERDA grant.
- Fluid/thermal sciences - theoretical and experimental.
- BioBlower that kills all airborne bacteria, spores and viruses by rapidly heating contaminated air to provide a continuous supply of sterile air for hospitals, military facilities and other applications where pathogen free air is essential.
- Design and construction of a blast wave generator for laboratory simulation of actual battlefield conditions to provide new insights into cell death in the inner ear, hippocampus and eye.
- Design and construction of experiments to evaluate the strength of dental adhesive bonds.
- Combustion characterization and optimization of outdoor wood burning hydronic heaters.

### **Academic degrees**

- October 1971    Doctor of Philosophy in Mechanical Engineering  
Cornell University
- June 1969        Master of Science in Mechanical Engineering  
Cornell University
- June 1966        Bachelor of Science in Mechanical Engineering  
Clarkson college of Technology

### **Present positions and professional experience**

*July 2013 - present:* Supervisor Engineering Machine Shop, Department of Mechanical and Aerospace Engineering, University at Buffalo, The State University of New York, Buffalo, NY.

*September 1985 - present:* Professor, Department of Mechanical and Aerospace Engineering, University at Buffalo, The State University of New York, Buffalo, NY.

*March 2003 - September 2010:* Professor, Department of Physiology and Biophysics, University at Buffalo, The State University of New York, Buffalo, NY.

*October 1985 - June 1992 and December 1999 - September 2010:* Associate Director, Center for Research and Education in Special Environments, University at Buffalo, The State University of New York, Buffalo, NY.

*December 1985 - September 1990:* Special Assistant Vice President for Sponsored Programs (Part Time), University at Buffalo, The State University of New York, Buffalo, NY.

*September 1979 - September 1985:* Associate Professor, Department of Mechanical and Aerospace Engineering, University at Buffalo, The State University of New York, Buffalo, NY.

*September 1974 - September 1979:* Assistant Professor, Department of Mechanical and Aerospace Engineering, University at Buffalo, The State University of New York, Buffalo, NY.

*October 1971 - July 1974:* Research Scientist, Western Electric Engineering Research Center, Princeton, NJ.

*June 1971 - October 1971:* Research Assistant, Cornell University, Ithaca, NY.

*September 1970 - June 1971:* Teaching Assistant, Cornell University, Ithaca, NY.

*September 1966 - September 1970:* NSF Traineeship, Cornell University, Ithaca, NY.

*June 1966 - September 1966:* Engineer, Apollo 11 Lunar Excursion Module Ascent Engine, Bell Aerospace, Wheatfield, NY.

*September 1964 - June 1966:* Dormitory Counselor, Clarkson College of Technology, Potsdam, NY.

*September 1964 - September 1965:* Assistant Technician, Department of Civil Engineering, Clarkson College of Technology, Potsdam, NY.

## **Honors and Awards**

Distinguished Inventor of the Year, Rochester Intellectual Property Association, 2010

Elected Fellow ASME, "The Fellow grade of membership recognizes exceptional engineering achievements and contributions to the engineering profession.", May 2008

Visionary Innovator Award, "In recognition of Licensing Your Invention 'Height and Width Adjustable Saddle Sling Seat Walker with Controllable Directional Tracking and Optional Supports' to Northeastern Biomechanical Manufacturing Corporation", 2006 (awarded in 2007)

2007 Inventor of the Year Nomination, Niagara Frontier Intellectual Property Law Association & Technical Societies Council of the Niagara Frontier

Visionary Innovator Award, "In recognition of Licensing Your Invention 'Thermal Destruction of Biotoxins by Compressive Heating of Airstreams' to Buffalo BioBlower Technologies, LLC", 2005 (awarded in 2006)

Visionary Innovator Award, "In recognition of Licensing Your Invention 'Low Drag Swim Apparel' to TYR Sport, Inc", 2004 (awarded in 2005)

"Notable Contributions to Teaching and Learning at UB", February 6, 2003.

Directed First Place Winner, Erik R. Bardy, "Design and Testing of a Total Body Thermal Protection Garment", Mechanical and Aerospace Engineering Graduate Student Association Poster Competition, April 15, 2003 (with David Pendergast and James Felske).

Certificate of Recognition, "With thanks for the positive influence you have had on students at the University at Buffalo as described in the 'Year After Survey' of 1999 graduates", presented by the Career Planning and Placement Division of Student Affairs, February 21, 2002.

First Prize, 8th Annual Statewide Student Conference, Collegiate Science & Technology Entry Program (with Courtney Miller and Yesenia Ramos, "Birth Simulator Machine"), April 2000.

Golden Key National Honor Society Honorary Member, 1990.

WBFO "UB Person of the Day," 1989.

SUNY Chancellor's Award for Excellence in Teaching, 1985.

Private pilot certificate, 1983.

Recipient of Region III ASME "Outstanding Student Section Faculty Advisor Award" for 1978 to 1979.

Recipient of Buffalo ASME Section, "Service to Mechanical Engineering Award", May 9, 1979.

Directed winner of Ward E. Bullock Award for "Design and Construction of an Instrumented Isothermal Surface and Natural Convection Velocity and Temperature Measurements in a Fluid with Large Variable Viscosity Effects", by Mr. Robert D. Padlog, 1978.

Reviewer for Applied Mechanics Reviews, May 1976 to 1985.

Listed in Who's Who in the East, 18th Edition, 1976 to 1977.

Recipient of 1976 Tau Beta Pi "Professor of the Year in Engineering", Award at State University of New York at Buffalo.

Appointed the specialist Ph.D. recruiter for Bell Labs and the Western Electric Engineering Research Center for Mechanical Engineering at Cornell University, Ithaca, New York, 1976

Selected for 1974 Internship Program at Western Electric Engineering Research Center.

NSF Trainee, Cornell University, September 1966 to September 1970.

Most Promising Senior Mechanical Engineer Award, Clarkson College of Technology, 1966.

NSF Undergraduate Research Participation Grant, "An Analytical and Experimental Analysis of the Figure of Merit of a Closed - Spaced Thermionic Diode", Clarkson College of Technology, June 1965 to September 1965, with Prof. R.A. Kenyon.

R.H. Miller Scholarship, Clarkson College of Technology, 1963 to 1966.

New York State Air Youth (Model Airplane) State Champion, 1960.

## **Courses taught**

### *Lecture courses:*

EAS 101 Engineering for Non-majors (Honors Seminar), Fall 1992

EAS 103 Introduction to Engineering, Fall 1989-1994

ME 214 Applied Thermodynamics, Mercer County Community College, Trenton, NJ, Spring 1974

ME 335 Transport Processes I (Undergraduate Fluid Mechanics), SUNYAB, Fall 1974, Fall 1975, Fall 1977, Fall 1978, Fall 1979

ME 336 Transport Processes II (Undergraduate Heat Transfer), SUNYAB, Spring 1975, Spring 1977, Spring 1982 - present

MEA 460C Ultralight Project (Undergraduate), SUNYAB, Fall 1984-Fall 1986.

MAE/ASE 479 Aircraft Design and Construction Fall 1990, Fall 1991, Fall 1992

ME 611 Convective Heat Transfer (Graduate), SUNYAB, Spring 1975

EAS 204 Thermodynamics I (Undergraduate), SUNYAB, Fall 1975, Spring 1977

ME 546 Heat Transfer II (Graduate), SUNYAB, Spring 1976

MAE 434 Aircraft Design, SUNYAB, Spring 1994-Spring 2001

MAE 459 renumbered to MAE 494 Assistive Device Design (National Science Foundation Sponsored), 1989-2010

ME 613 Stability and Transition (Graduate), Spring, 1976

ME 545 Heat Transfer I (Graduate) SUNYAB, Fall 1976, Fall 1982, Fall 1983, Fall 1984

ME 469 Environmental Transport Processes (Senior elective), SUNYAB, Spring 1978

ME 376 Computers and Their Applications (Undergraduate), SUNYAB, Spring 1978

MEA 335 now MAE 337, Transport Processes Laboratory (Undergraduate), SUNYAB, Fall 1979, Fall 1981

ME 336 now MEA 338, Transport Processes Laboratory (Undergraduate), SUNYAB, Spring 1980, Fall 1980, Spring 1985

ASE/MEA 331, Introduction to Aerospace Engineering (Undergraduate), SUNYAB, Fall 1982, Fall 1983, Fall 1984

EAS 499, Engineering Machine Shop, Winter 2014 and Winter 2015

MAE 431 Energy Systems, Fall 2014

*Independent study courses:*

Mr. K.H. Jahn, "Design and Construction of a Wallaston Prism Schlieren Interferometer", SUNYAB, Spring 1976

Messrs. L.W. Stachniak and M.R. Templet, "Heat Transfer from a Concentrated Heat Source on a Vertical Adiabatic Surface", SUNYAB, Spring 1976

Mr. Robert D. Padlog, "Design and Construction of an Instrumented Isothermal Surface and Natural Convection Velocity and Temperature Measurements in a Fluid with Variable Viscosity Effects", SUNYAB, Spring 1977

Mr. Peter E. Weidler, "Storage of Solar Energy Utilizing Phase Change", SUNYAB, Spring 1977

Mr. Eric A. Gallion, "Using Air as the Working Fluid in a Concentrating Solar Collector", SUNYAB, Spring 1977

Messrs. R.D. Beam, C.A. McMaster and G.R. Williams, "Design and Construction of a Concentrating Solar Collector", SUNYAB Spring 1977

Messrs. R.J. Markel and G.A. Kerwin, "Construction of an Instrumented Concentrating Solar Collector", SUNYAB, Spring 1978

Mr. T.P. Kristich, "Design and Construction of an Adiabatic Surface for Heat Transfer Measurements in Air", SUNYAB, Spring 1976

Mr. J.S. Cangelosi, "Visualization of the Convective Motion above a Heated Horizontal Surface Facing Upward", SUNYAB, Fall 1976

Mr. Joseph S. Cangelosi, "A Wollaston Prism Schlieren Interferometer for Flow Visualization", SUNYAB, Spring 1977

Edith M. Harmon, "Measured Temperature Above a Concentrated Heat Source on a Surface in Air", SUNYAB, Spring 1977

Mr. John R. Soltysiak, "Effect of Prandtl Number on the Temperature Above a Concentrated Heat Source on a Surface", SUNYAB, Spring 1977

Mr. Eric A. Gallion, "An Inexpensive Selective Surface for Concentrating Solar Collectors", SUNYAB, Summer 1977

Mr. John G. Moran, "Design and Construction of a Concentrating Solar Collection System", SUNYAB, Summer 1977

Mr. David J. Kukulka, "Transport Properties of Sea Water", SUNYAB, Summer 1977

Messers. G.T. Kerwin, C.A. McMaster and D.M. Strasser, "Instrumenting a Concentrating Solar Collection System", SUNYAB, Fall 1977

Mr. D.J. Kukulka, "Calculated Specific Heat of Seawater", SUNYAB, Fall 1977

Messers. R.E. Danforth and S.M. Rivard, "Construction of an Instrumented Hot Air Solar Collector", SUNYAB, Spring 1978

Mr. Colin K. Drummond, "Application of a Concentrating Solar Collector to Heat a Small Room", SUNYAB, Fall 1978

Mr. Robert G. Mencer, "Application of a Hot Air Solar Collector to Heat a Small Room", SUNYAB, Fall 1978

Mr. Colin K. Drummond, "Application of a Concentrating Solar Collector to Heat a Small Room", SUNYAB, Spring 1979

Mr. C.M. Restrepo, "Application of a Hot Air Solar Collector to Heat s Small Room", SUNYAB, Spring 1979

Mr. Trevor Poole, "Free Dendritic Ice Crystal Growth from Subcooled Water", SUNYAB, Spring 1980

Mr. F. El - Hayek, "The Convectively Cooled Freezing of Subcooled Metal Spheres (numerical solution)", SUNYAB, Summer 1980

Mr. Trevor Poole, "Free Dendritic Ice Crystal Growth from Subcooled Water", SUNYAB, Fall 1980

Mr. Robert Burgess, "Naturally Occurring Polygonal Cracks", SUNYAB, Spring 1981

Messers. A. Kaplan and A. Glantzman, "Photographs of Freely - Growing IceCrystals in a Subcooled Melt", SUNYAB, Spring 1981

Mr. H. Hussein, "Ice Crystal Growth From a Subcooled Melt", SUNYAB, Fall 1981

Messers. H.J. Hussein and J.M. Smietana, "Design of an Instrumented Cold Chamber for Ice Crystal Growth Studies", Spring 1982

Mr. C.A. Tallon, "Photograph of Ice Crystals Growing in a Subcooled Melt", SUNYAB, Fall 1982

Mr. J.S. Tashman, "Analysis of Flight Trajectory and Design of an Instrumented Airplane Launch System", SUNYAB, Fall 1982

Mr. J.S. Tashman, "Videotape of Laboratory Simulation of Compressed Air Energy Storage Champagne Effect", SUNYAB, Spring 1983

Mr. P.A. Simonetti, "Measurements of Gas Composition Above a Decompressing Liquid Saturated with Air", SUNYAB, Spring 1983, Fall 1983

"Design and Construction of an Ultralight Aircraft for High Altitude Record", SUNYAB, Summer 1983, Fall 1983, Spring 1984, Summer 1984, Fall 1984; Spring 1985

Mr. Michael Ganis, "Thermal Analysis of Microwave Heating of Tissue", SUNYAB, Spring 1984

Messrs. Mark E. Brown and Robert Gaeta, "Thermal Critique of the Thermal Dilution Method", SUNYAB, Spring 1984

Mr. Jeffrey M. Ippoliti, "Airships - Past, Present and Future", SUNYAB, Spring 1984

Ms. Lois Westfall, "Design and Construction of a Chicken Egg Incubator", Fall 1984

### **Graduate students advised**

#### *Master's students advised:*

Mr. Van Carey, M.S. conferred February 1976.

Mr. Ronald Mercier, M.S. conferred September 1976.

Mr. Karl Jahn, M.S. conferred September 1977.

Mr. Emmanuel Ajiniran, M.S. conferred December 1977.

Mr. Russell Johnson, M.S. conferred September 1978.

Mr. Robert Padlog, M.S. conferred September 1979.

Mr. Lih-Tyng Hwang, M.S. conferred September 1980.

Mr. Humayun Arif, M.S. conferred June 1981.

Mr. David Kukulka, M.S. conferred June 1981.

Mr. Jiin-Yuh Jang, M.S. conferred June 1981.

Mr. Wen-Feng Lu, M.S. conferred January 1982.

Ms. Tina Urso, M.S. conferred February 1983.

Mr. Patrick O'Brien, M.S. conferred May 1984.

Mr. John Fale, M.S. conferred May 1984.

Mr. John Lamb, M.S. conferred September 1985.

Mr. Daniel Moscaritollo, M.S. conferred June 1986.

Mr. Mark Zima, M.S. conferred September 1989.

Mr. David Beddome, M.S. conferred September 1991.

Mr. Mike McPartland, M.S. conferred July 1992.

Mr. Sean Kelly, M.S. conferred July 1992.

Mr. Joseph Ciccarella, M.S. conferred July 1992.

Mr. Kenneth Przybyla, M.S. conferred July 1992.

Mr. Michael Gwin, M.S. conferred September 1992.

Mr. William Branca, M.S. conferred April 1993.

Mr. James Mayrose, M.S. conferred April 1993.



Mr. Kee Wee, M.S. conferred July 1993.  
Mr. Anant Poopisut, M.S. conferred September 1993.  
Mr. Jerry Behar, M.S. conferred July 1994.  
Ms. Therese Short, M.S. conferred July 1994.  
Mr. Albert Benzoni, M.S. conferred, July 1995.  
Mr. Keith Nelson, M.S. conferred July 1995.  
Mr. Alexander Darien, M.S. conferred July 1997.  
Mr. Pongtron Prombut, M.S. conferred February 1999.  
Mr. Henry Howard, M.S. conferred February 1999.  
Mr. Benjamin Taggart, M.S. conferred February 1999.  
Mr. Howard Smith, M.S. conferred June 2001.  
Mr. Thai Le, M.S. conferred February 2002.  
Mr. Aasim Syed, M.S. conferred June 2002.  
Mr Danial McDonald, M.S. conferred June 2002.  
Mr. Sawson Samimy, M.S. conferred September 2002.  
Mr. Ashish Joshi, M.S. conferred June 2004.  
Mr. Jeffrey Balikowski, M.S. conferred June 2005.  
Ms. Andrea McClain, M.S. conferred June 2006.  
Mr. Robert, Bouza, M.S. conferred June 2006.  
Mr. Matthew Klinczar, M.S. conferred 2006.  
Ms. Sara Goucher, M.S. conferred June 2008.  
Mr. Edward Demauro, M.S. conferred July 2008.  
Ms. Jennifer Moeller, M.S. conferred September 2011.  
Mr. Andrew Jensen Newman, M.S. conferred February 2010.  
Mr. Sandeepan Dutta, M.S. conferred July 2011.  
Mr. Santosh Rohit Yerrabolu, M.S. conferred June 2012.  
Mr. Benjamin Blankenship, M.S. conferred December 2012.  
Mr. Tjung-Yeung Wong, M.S. conferred February 2013.  
Ms. Yukie Furukawa, M.S. conferred February 2013.

*Doctoral students advised:*

Dr. Santosh Rohit Yerrabolu, Ph.D. conferred September 2015.  
Dr. Erik Bardy, Ph.D. conferred June 2006.  
Dr. David Blekhman, Ph.D. conferred September 2002.  
Dr. David Kukulka, Ph.D. conferred June 1988.  
Dr. Arshad Qureshi, Ph.D. conferred June 1986.  
Dr. Hechmi Hamouda, Ph.D. conferred August 1985.  
Dr. Youngkyu Hwang, Ph.D. conferred May 1984.  
Dr. Jiin-Yuh Jang, Ph.D. conferred June 1983.

## **Publications**

*Citations and impact*

- Web of Science citations 724; h-14
- Google Scholar citations 1436; h-20; i10-36

*Refereed journal papers*

- Gebhart, B. and J. Mollendorf, "Viscous Dissipation in External Natural Convection Flows", Journal of Fluid Mechanics, Vol. 38, pp. 97 - 107, 1969.
- Mollendorf, J.C. and B. Gebhart, "An Experimental Study of Vigorous Transient Natural

- Convection", *Journal of Heat Transfer, Trans. ASME*, Vol. 92, pp. 628 - 634, 1970.
- Mollendorf, J.C. and B. Gebhart, "Thermal Buoyancy in Round Laminar Vertical Jets", *International Journal of Heat and Mass Transfer*, Vol. 16, pp. 735 - 745, 1973.
  - Mollendorf, J.C. and B. Gebhart, "An Experimental and Numerical Study of the Viscous Stability of a Round Laminar Vertical Jet With and Without Thermal Buoyancy for Symmetric and Asymmetric Disturbances", *Journal of Fluid Mechanics*, Vol. 61, pp. 367 - 399, 1973.
  - Mollendorf, J.C., "The Applicability of Approximate and Exact Transient Heat Transfer Analysis to Heating Processes Used to Solder Multilayer Circuit Boards", *IEEE Transactions on PHP*, Vol. 11, pp. 96 - 104, 1975.
  - Gebhart, B. and J.C. Mollendorf, "A New Density Relation for Pure and Saline Water", *Deep Sea Research*, Vol. 24, pp. 831 - 848, 1977; see also Vol. 25, pp. 503 - 505, 1978.
  - Carey, V.P. and J.C. Mollendorf, "The Temperature Field Above a Concentrated Heat Source on a Vertical Adiabatic Surface", *International Journal of Heat and Mass Transfer*, Vol. 20, pp. 1059 - 1067, 1977.
  - Mercier, R.J., S. Malkin and J.C. Mollendorf, "Thermal Stresses from a Moving Band Source of Heat on the Surface of a Semi - Infinite Solid", *Journal of Engineering for Industry, Trans. ASME*, Vol. 100, pp. 43 - 48, 1978.
  - Carey, V.P. and J.C. Mollendorf, "Measured Variation of Thermal Boundary Layer Thickness with Prandtl Number for Laminar Natural Convection from a Vertical Uniform - Heat - Flux Surface", *International Journal of Heat and Mass Transfer*, Vol. 21, pp. 481 - 488, 1978.
  - Gebhart, B. and J.C. Mollendorf, "Buoyancy - Induced Flows in a Liquid Under Conditions in Which Density Extrema May Arise", *Journal of Fluid Mechanics*, Vol. 89, pp. 673 - 707, 1978.
  - Mollendorf, J.C. and T. - Y. Chu, "Transient Film Condensation on Upward - Facing Horizontal Surfaces", *Chem. Eng. Commun.*, Vol. 3, pp. 175 - 188, 1979.
  - Gebhart, B., V.P. Carey and J.C. Mollendorf, "Buoyancy - Induced Flows Due to Energy Sources in Cold Quiescent Pure and Saline Water", *Chem. Eng. Commun.*, Vol. 3, pp. 555 - 575, 1979.
  - Carey, V.P., B. Gebhart and J.C. Mollendorf, "Buoyancy Force Reversals in Vertical Natural Convection Flows in Cold Water", *Journal of Fluid Mechanics*, Vol. 97, pp. 279 - 297, 1980.
  - Carey, V.P. and J.C. Mollendorf, "Variable Viscosity Effects in Several Natural Convection Flows", *International Journal of Heat and Mass Transfer*, Vol. 23, pp. 95 - 109, 1980.
  - Mollendorf, J.C., R.S. Johnson and B. Gebhart, "Several Constant Buoyancy Plume Flows in Pure and Saline Water at its Density Extreme", *Journal of Fluid Mechanics*, Vol. 113, pp. 269 - 282, 1981.
  - Gill, W.N., J. - Y. Jang and J.C. Mollendorf, "Rapid Solidification of Subcooled Small Metallic Drops", *Chem. Eng. Commun.*, Vol. 12, pp. 3 - 31, 1981.
  - El - Henawy, I., B. Gebhart, B. Hassard, N. K and J.C. Mollendorf, "Numerically Computed Multiple Steady States of Vertical Buoyancy Induced Flows in Cold Pure Water", *Journal of Fluid Mechanics*, Vol. 122, pp. 235 - 250, 1982.
  - Mollendorf, J.C. and K.H. Jahn, "Onset of Convection in a Horizontal Layer of Cold Water", *Journal of Heat Transfer, Trans. ASME*, Vol. 105, pp. 460 - 464, 1983.
  - Jahn, K.H. and J.C. Mollendorf, "The Wollaston - Prism Schlieren Interferometer - - New Results and Past Controversies Revealed and Resolved", accepted, *Chem. Eng. Commun.*

- Mollendorf, J.C., E.B. Ajiniran and H. Arif, "Developing Flow and Transport Above a Suddenly Heated Horizontal Surface in Cold Water", *Int. J. Heat and Mass Transfer*, Vol. 27, pp. 273 - 289, 1984.
- Johnson, R.S. and J.C. Mollendorf, "Transport from a Vertical Ice Surface Melting in Saline Water", *Int. J. Heat and Mass Transfer*, Vol. 27, pp. 1928 - 1932, 1984.
- Padlog, R.D. and J.C. Mollendorf, "Variable Fluid Property Effects on Transport in Pure Water Around the Density Extremum", *Journal of Heat Transfer*, Vol. 105, pp. 655 - 658, 1983.
- Hwang, L. - T., W. - F. Lu, and J.C. Mollendorf, "The Effects of the Density Extremum and Boundary Conditions on the Stability of a Horizontally Confined Water Layer", *Int. J. Heat and Mass Transfer*, Vol. 27, pp. 497 - 510, 1984.
- Gill, W.N., J. - Y. Jang, J.C. Mollendorf and C.M. Adam, "Freezing of Small Subcooled Metallic Spheres - Internal Nucleation", *J. Crystal Growth*, Vol. 66, pp. 351 - 368, 1984.
- Kukulka, D.J., B. Gebhart and J.C. Mollendorf, "Thermodynamic and Transport Properties of Pure and Saline Water", *Advances in Heat Transfer*, Vol. 18, pp. 325 - 363, 1987.
- Hamouda, H. and J.C. Mollendorf, "Stability Analysis of a Growing Horizontal Thermal Layer Subject to Sudden Bottom Heating," *International Journal of Heat & Mass Transfer*, Vol. 34, 1991.
- Benzoni, A., D.J. Kukulka, and J.C. Mollendorf, "Digital Simulation of a Pneumatic Pressure Regulator," *Simulation* 63, 1994.
- Kukulka, D.J., J. Lamb, and J.C. Mollendorf, "Thermal Stratification Effects Near a Vertical Ice Slab in Cold Water," *Journal of Thermophysics and Heat Transfer*, 9, 1995.
- Catipovic, R.M., Tittle, L.A., and Mollendorf, J.C., "A New Cervical-Thoracic Orthosis: Clinical Report of Seven Cases", *J. Prosthetics and Orthotics* 10, 2, 33-36, 1998.
- Aleshin, G.Y., Mollendorf, J.C., and Felske, J.D. "The Temperature Response of a Metallic Rod Near a 'Steam Explosion' ", *International Communications in Heat and Mass Transfer*, 26, 509-512, 1999.
- Blekhman DI, JC Mollendorf, JD Felske and JA Lordi, "Analysis of High-Pressure-Ratio Root's Type Compressor Producing a Very High-Temperature Outlet Gas Stream", *International Journal of Transport Phenomena*, (2002) 4: 275-284.
- Mollendorf, J.C., J.D. Felske, S. Samimy, D.R. Pendergast, "A Fluid/Solid Model for Predicting Slender Body Deflection in a Moving Fluid", *J Applied Mechanics*, 70, 3, 346-350, May 2003.
- Pendergast D.R., J.C. Mollendorf, C. Logue and S. Samimy, "Evaluation of Fins Used in Underwater Swimming", *J Undersea and Hyperbaric Medicine*, 30, 1, 75-85, 2003.
- Pendergast D.R., J.C. Mollendorf, C. Logue and S. Samimy, "Underwater Fin Swimming in Women with Reference to Fin Selection", *J Undersea and Hyperbaric Medicine*, 30, 1, 57-73, 2003.
- Pendergast D, P Zamparo, PE di Prampero, C Capelli, P Cerretelli, A Termin, A Craig Jr, D Bushnell, D Paschke, J Mollendorf. Energy balance of human locomotion in water. *E J Appl Physiol*. 90: 377-386, 2003.
- Mollendorf JC, AC Termin, II, E Oppenheim, DR Pendergast. Effect of swim suit design on passive drag. *J Med Sci Sports & Exerc*. 36:1, 1-7, June 2004.
- Blekhman DI, JC Mollendorf, JD Felske and JA Lordi, "Multi-Control-Volume Analysis of the Compression Process in a High-Temperature Root's Type Compressor", *International Journal of Rotating Machinery*, 10, 45-53, 2004.
- Samimy S., JC Mollendorf and DR Pendergast, "A Theoretical and Experimental

- Analysis of Diver Technique in Underwater Fin Swimming”, *J Sports Engineering*, (2005).8:27-38
- Pendergast DR, Mollendorf JC, Zamparo P, Termin A, Bushnell D and Paschke D, “The Influence of Drag on Human Locomotion in Water”, *J Undersea and Hyperbaric Medicine*, 32(1):45-47, 2005.
  - Blekhman, DI, Mollendorf, JC; Felske, JD, Lordi, JA, Joshi, “A Roots Compressor: High Temperature Testing and Modeling”, *ASME Process Industries Division* (2004) 9: 43-5 8
  - Zamparo, P, DR Pendergast, JC Mollendorf, B Termin and AE Minetti, “An Energy Balance of Front Crawl”, *Eur J Appl Physiol* (2005), 94:134-144
  - Bardy, E, JC Mollendorf and DR Pendergast, “Thermal conductivity and compressive strain of foam neoprene insulation under hydrostatic pressure”, *J Phys D: Appl Phys* 38 (2005) 3832-3 840
  - Bardy, E, JC Mollendorf and DR Pendergast, “Thermal resistance and compressive strain of underwater aerogel-syntactic foam hybrid insulation at atmospheric and elevated hydrostatic pressure”, *J Phys D: Appl Phys* 39 (2006) 1908-1918
  - Bardy, ER, JC. Mollendorf, DR. Pendergast, “Thermal conductivity and compressive strain of aerogel insulation blankets under applied hydrostatic pressure”, *Journal of Heat Transfer*, 129 (2007) p. 232-235
  - Bardy, ER, JC. Mollendorf, DR. Pendergast, “A comparison of the thermal resistance of a foam neoprene wetsuit to a wetsuit fabricated from aerogel-syntactic foam hybrid insulation”, *Journal of Physics D: Applied Physics*, 39 (2006) p. 4068-4076
  - Kahn, KR, JC Mollendorf and DB Balliram-Manohalal, “The clinical consequences of loose lips”, *Contemporary OB / GYN* (2007) 3 6-42
  - Balikowski, JR and JC Mollendorf, Performance of phase change materials in a horizontal annulus of a double-pipe heat exchanger in a water-circulating loop”, *Journal of Heat Transfer*, 129 (2007) 265-272
  - Pendergast, DR, JC Mollendorf, R Cuviallo and AC Termin, II, “Application of theoretical principles to swimsuit drag reduction”, *Sports Engineering*, 9 (2006) 65-76
  - Bardy, ER, JC Mollendorf, DR Pendergast, “Thermal conductivity and compressive strain of aerogel insulation blankets under applied hydrostatic pressure”, *Journal of Heat Transfer*, 129 (2007) p. 232-235
  - Bardy, ER, JC Mollendorf, DR Pendergast, “Regional and Total Body Active Heating and Cooling for a Prone Position Diver at Rest Submerged in Water at Varied Temperatures”, *Journal of Physics D: Applied Physics*, 41 (2008) 035501
  - Bardy, ER, JC Mollendorf, DR Pendergast, "Active Heating and Cooling for an Underwater Diver" *Europhysics news* (European Physical Society, EPS), Vol. 39 No. 1, page 13 (January-February 2008)
  - Mollendorf, JC, Pendergast, DR 2010. Thermal Protection System for Underwater Use in Cold and Hot Water. *J Thermal Science and Engineering Applications* 2, 1-12, see also <http://link.aip.org/link/?TSE/2/011003> DOI: 10.1115/1.4001986
  - Newman, AJ, Mollendorf, JC 2010. The Peak Overpressure Field Resulting From Shocks Emerging From Circular Shock Tubes. *J Fluids Engineering*, 132, 1-7, see also <http://link.aip.org/link/?JFG/132/081204> DOI: 10.1115/1.4002183
  - Pendergast DR, DiMauro E, Fletcher M, Stimson E, Mollendorf JC 2011. A rechargeable lithium-ion battery module for underwater use. *J. Power Sources* 196, 793-800, see also <http://www.elsevier.com>
  - Campillo-Funollet, M, Dargush, GF, VanSlooten, RA, Mollendorf, JC, Kim,H, Makowka, 2014. Size-Dependent strength of Dental Adhesive Systems. *J. Dental*

- Materials, <http://www.sciencedirect.com/science/article/pii/S0109564114000980>
- Newman,AJ, Hayes,SH, Rao,AS, Allman,BL, Manohar, S, Dalian Ding, Daniel Stolzberg, Edward Lobarinas, Joseph C. Mollendorf, Richard Salvi 2015. Low-cost blast wave generator for studies of hearing loss and brain injury: Blast wave effects in closed spaces. *Journal of Neuroscience Methods* 242, 82–92, <http://dx.doi.org/10.1016/j.jneumeth.2015.01.009>

*Refereed conference papers*

- Mollendorf, J.C. and B. Gebhart, "Transition and Relaminarization in an External Natural Convection Flow", ASME - AIChE 11th National Heat Transfer Conference, ASME paper #69 - HT - 11, Minneapolis, August 1969.
- Mollendorf, J.C. and B. Gebhart, "Axisymmetric Natural Convection Flows Resulting from the Combined Buoyancy Effects of Thermal and Mass Diffusion", Proceedings of the Fifth International Heat Transfer Conference, Vol. 5, pp. 10 - 14, Keidanran - Kaikan, Tokyo, Japan, September 1974.
- Mollendorf, J.C. and T. - Y. Chu, "Transient Film Condensation on Finite Horizontal Surfaces with Run - Off", ASME National Heat Transfer Conference, Paper 75 - HT - 16, San Francisco, August 11 - 13, 1975.
- Mercier, R.J., S. Malkin and J.C. Mollendorf, "Thermal Stresses from a Moving Band Source of Heat on the Surface of a Semi - Infinite Solid", ASME Winter Annual Meeting, Paper 77 - WA/PROD - 26, Atlanta, GA, November 27 - December 2, 1977.
- Carey, V.P. and J.C. Mollendorf, "Natural Convection in Liquids with Temperature Dependent Viscosity", Proceedings of the Sixth International Heat Transfer Conference, Vol. 5, pp. 211 - 216, Toronto, Ontario, Canada, August 7 - 11, 1978.
- Mollendorf, J.C. and B. Gebhart, "Relaminarization in External Natural Convection Flows", ASME - AIChE 18th National Heat Transfer Conference, Film, San Diego, August 6 - 8, 1979.
- Arif, H. and J.C. Mollendorf, "Development of Convection Above a Heated Horizontal Surface in an Extensive Fluid", AIChE/ASME 19th National Heat Transfer Conference Film, Orlando, July 27 - 30, 1980.
- Kukulka, D.J. and J.C. Mollendorf, "An Experimental Study of Transient Transport Near a Heated Horizontal Surface", accepted for the First World Conference on Experimental Heat Transfer, Fluid Mechanics and Thermodynamics, Dubrovnik, Yugoslavia, September, 1988.
- D.J. Kukulka and J.C. Mollendorf, "Calculated Values of Sound Speed, Adiabatic Lapse Rate, Potential Temperature and Isothermal Compressibility for Pure and Saline Water," *CSME Mechanical Engineering Forum 1990*, Toronto Canada, 1990.
- J.C. Mollendorf, H.L. Relation, and R.C. Pfahl, "Transient Response of Two Low Bio Number Masses Connected by a Thermal Resistance," First International Conference Transport Phenomena in Processing, Honolulu, Hawaii, 1992.
- D.J. Kukulka, J. Lamb, and J.C. Mollendorf, "Thermo Stratification Effects Near a Vertical Ice/Slab in Cold Water," 1993 National Heat Transfer Conference, Atlanta, GA, 1993.
- D.J. Kukulka, A. Poopisut, and J.C. Mollendorf, "Development of Planar Flow Casting Transport Relations," 2nd European Thermal - Sciences and 14th VIT National Heat Transfer Conference, Rome, 1996.
- D.J. Kukulka and J.C. Mollendorf, "Calculated Properties of Pure and Saline Water Near the Temperature of Maximum Density," Proceedings of the 5th International Symposium on Thermo Engineering and Sciences for Cold Regions, Ottawa, Canada, 1996.

- Blekhman, D.I., Mollendorf, J.C., Felske, J.D., and Lordi, J.A., "Analysis of a High-Pressure-Ratio Root's-Type Compressor Producing a Very High Temperature Outlet Gas Stream", 8th International Symposium On Transport Phenomena and Dynamics of Rotating Machinery, Honolulu, Hawaii, March 26-30, 2000.
- Blekhman, D.I., Mollendorf, J.C., Felske, J.D., and Lordi, J.A., "Multi-Control-Volume Analysis of the Compression Process in a High-Temperature Root's-Type Compressor", 9th International Symposium On Transport Phenomena and Dynamics of Rotating Machinery, Honolulu, Hawaii, February 10-14, 2002.
- Bardy E, Mollendorf J, Janish J, Buchner R, Stimson E, Pendergast DR. Development and testing of thermal insulation. Undersea Hyperbaric Medical Society Meeting, Sydney Australia, May 2004.
- Balikowski J, Mollendorf J, Buchner R, Pendergast DR. Application of a fuel cell to heat and cool divers. Undersea Hyperbaric Medical Society Meeting, Sydney Australia, May 2004.
- Pendergast DR, Mollendorf J, Janish J, Stimpson E, Fletcher M. Total body zoned cooling and heating suit for divers. Undersea Hyperbaric Medical Society Meeting, Sydney Australia, May 2004.
- Pendergast DR and JC Mollendorf, "Thermal protection of divers in hot and cold water", Undersea and Hyperbaric Medical Society Meeting, Las Vegas, Nevada, June 2005
- D.R. Pendergast, C. Capelli, A.B. Craig Jr., P.E. di Prampero, A.E. Minetti, J. Mollendorf, A. Termin II, P. Zamparo, "Biophysics of Swimming" J.P. Vilas-Boas, F. Alves, A. Marques (eds.), Book of Abstracts of the Xth International Symposium Biomechanics and Medicine in Swimming. Portuguese Journal of Sport Sciences, Suppl 1, 2006
- Bardy, ER, JC. Mollendorf, DR. Pendergast, "Active heating/cooling requirements for divers in water at varying temperatures", ASME-JSME Thermal Engineering Summer Heat Transfer Conference, Vancouver British Columbia, 2007
- Pendergast, DR and JC Mollendorf, "Diver thermal protection in cold water: a new approach", Undersea and Hyperbaric Medical Society Annual Scientific Meeting, Maui, Hawaii, 2007
- Mollendorf, JC and Pendergast, DR, "An active system to thermally protect divers in cold water", Undersea and Hyperbaric Medical Society Annual Scientific Meeting, Maui, Hawaii, 2007
- Bardy, ER, JC Mollendorf, 2008, "Variation of the Thermal Conductivity of Elastomeric Foam with Pressure", Proceedings of the ASME Summer Heat Transfer Conference, Jacksonville FL, HT2008-56227
- Pendergast DR, JC Mollendorf, M Fletcher, E Stimson, 2008, "Total Body and Regional Power Requirements for Diver Thermal Protection in Cold and Hot Water" Undersea and Hyperbaric Medicine Annual Meeting, Salt Lake City, UT June 26-29

*Refereed abstracts*

- Chu, T. - Y., J.C. Mollendorf and R.C. Pfahl, Jr., "A New Mass Soldering Process: Condensation Soldering", Proceedings of the National Electronic Packaging and Production Conference, pp. 101 - 104, Anaheim, February 1974.
- Pfahl, R.C., Jr., J.C. Mollendorf and T. - Y. Chu, "Condensation Soldering", American Welding Society Conference, Houston, May 1974.
- Mollendorf, J.C., T. - Y. Chu and R.C. Pfahl, Jr., "A New Mass Soldering Process: Condensation Soldering", NEPCON East, NY, June 1974.
- Chu T. - Y., J.C. Mollendorf and R.C. Pfahl, Jr., "A New Mass Soldering Process:

- Condensation Soldering", Proceedings of the Technical Programme, Internecon, pp. 123- 128, Brighton, England, October 1974.
- Gill, W.N. and J.C. Mollendorf, "Simultaneous Heat and Mass Transfer in Ice Crystal Growth from Solution", AIChE 73rd Annual Meeting, Chicago, November, 1980.
  - Lundgren, C.E.G., J.C. Mollendorf, A.H. Qureshi and T.L. Urso, "Factors Influencing Air Absorption and Release in Water Within the 1 - 70 atm Range", AIAA/EPRI International Conference on Underground Pumped Hydro and Compressed Air Energy Storage, San Francisco, September 22, 1982.
  - Mollendorf, J.D., D.M. Moscaritollo and D. Hickey, "Transient Pressure Response of the Gaseous Contents of a Thin - Walled, Spherical Pressure Vessel to Externally Varying Pressure", 23 Annual Meeting of the Society of Engineering Science, Buffalo, NY, August 1986.
  - Pendergast DR, A.C. Termin II, and J Mollendorf, "Effect of Swim Suit Design on Drag", American College of Sports Medicine, Baltimore MD, 4/2000.
  - Other publications (not refereed - excluding company reports):
  - Mollendorf, J.C., "The Effect of Thermal Buoyancy on the Hydrodynamic Stability of a Round, Laminar, Vertical Jet", Ph.D. thesis, Cornell Univ., Ithaca, NY, 130 pages, 1971.
  - Chu, T. - Y., J.C. Mollendorf and R.C. Pfahl, Jr., "Soldering by Condensation Heat Transfer", Western Electric Eng. Res. Cent. T.N., Vol. 7, No. 3, pp. 6,7 and 11, 1973.
  - Chu, T. - Y., J.C. Mollendorf and G.M. Wenger, "Condensation Soldering: A New Mass Soldering Process", Western Electric Engineer, Vol. XIX, No. 2, cover and pp. 24 - 30, April 1975.
  - Pfahl, R.C., Jr., J.C. Mollendorf and T. - Y. Chu, "Condensation Soldering", Welding Journal, Vol. 54(1), pp. 22 - 25, January 1975.
  - Kraus, A.D., A.E. Bergles and J.C. Mollendorf, "Directions of Heat Transfer in Electronic Equipment", Report of Research Workshop, NSF Grant ENG - 7701297, 144 pages, 1978.
  - Invited member of "Melting and Solidification" and "Transition and Turbulence Modeling" groups at the NSF/Notre Dame Natural Convection Workshop, Breckenridge, Colorado, July 18 - 21, 1982.

*Book chapters*

- Enderle, JD, Editor, "National Science Foundation 1990 Engineering Senior Design Projects to Aid the Disabled", chapter 11, pp. 175-201, see also <http://nsfpad.bme.uconn.edu/1990/chapter11.pdf> .
- Enderle, JD, Editor, "National Science Foundation 1991 Engineering Senior Design Projects to Aid the Disabled", chapter 9, pp. 103-119 [http://nsfpad.bme.uconn.edu/1991/chapter\\_9.pdf](http://nsfpad.bme.uconn.edu/1991/chapter_9.pdf) .
- Enderle, JD, Editor, "National Science Foundation 1992 Engineering Senior Design Projects to Aid the Disabled", chapter 10, pp. 123-145 [http://nsfpad.bme.uconn.edu/1992/chapter\\_10.pdf](http://nsfpad.bme.uconn.edu/1992/chapter_10.pdf)
- Enderle, JD, Editor, "National Science Foundation 1993 Engineering Senior Design Projects to Aid the Disabled", chapter 7, pp. 82-99 [http://nsfpad.bme.uconn.edu/1993/chapter\\_7.pdf](http://nsfpad.bme.uconn.edu/1993/chapter_7.pdf) .
- Enderle, JD, Editor, "National Science Foundation 1994 Engineering Senior Design Projects to Aid the Disabled", chapter 8, pp. 64-83 [http://nsfpad.bme.uconn.edu/1994/chapter\\_8.pdf](http://nsfpad.bme.uconn.edu/1994/chapter_8.pdf) .
- Enderle, JD, Editor, "National Science Foundation 1995 Engineering Senior Design Projects to Aid the Disabled", chapter 8, pp. 105-133 [http://nsfpad.bme.uconn.edu/1995/chapter\\_8.pdf](http://nsfpad.bme.uconn.edu/1995/chapter_8.pdf)

- [pad.bme.uconn.edu/1994/chapter\\_8.pdf](http://pad.bme.uconn.edu/1994/chapter_8.pdf) .
- Enderle, JD and B Hallowell, Editors, “National Science Foundation 1996 Engineering Senior Design Projects to Aid the Disabled”, chapter 7, pp. 97-139 <http://nsf-pad.bme.uconn.edu/1996/Chapter%207.pdf> .
  - Enderle, JD and B Hallowell, Editors, “National Science Foundation 1997 Engineering Senior Design Projects to Aid the Disabled”, chapter 11, pp. 133-173 <http://nsf-pad.bme.uconn.edu/1997/1997%20Chapter%2011.pdf> .
  - Enderle, JD and B Hallowell, Editors, “National Science Foundation 1998 Engineering Senior Design Projects to Aid the Disabled”, chapter 13, pp. 141-171 <http://nsf-pad.bme.uconn.edu/> .Enderle, JD and B Hallowell, Editors, “National Science Foundation 1999 Engineering Senior Design Projects to Aid the Disabled”, chapter 14, pp. 151-179 <http://nsf-pad.bme.uconn.edu/> .
  - Enderle, JD and B Hallowell, Editors, “National Science Foundation 2000 Engineering Senior Design Projects to Aid the Disabled”, chapter 13, pp. 155-189 <http://nsf-pad.bme.uconn.edu/> .
  - Enderle, JD and B Hallowell, Editors, “National Science Foundation 2001 Engineering Senior Design Projects to Aid the Disabled”, chapter 13, pp. 137-168 <http://nsf-pad.bme.uconn.edu/> .
  - Enderle, JD and B Hallowell, Editors, “National Science Foundation 2002 Engineering Senior Design Projects to Aid the Disabled”, chapter 12, pp. 117-145 <http://nsf-pad.bme.uconn.edu/> .
  - Enderle, JD and B Hallowell, Editors, “National Science Foundation 2003 Engineering Senior Design Projects to Aid the Disabled”, chapter 11, pp. 131-177 <http://nsf-pad.bme.uconn.edu/>, appeared in 2005
  - D.R. Pendergast, C. Capelli, A.B. Craig Jr., P.E. di Prampero, A.E. Minetti, J. Mollendorf, A. Termin II, P. Zamparo, “Biophysics of swimming”. In: Swimming dicine X. J.P. Vilas-Boas, F. Alves, A. Marques (eds.), Biomechanics and Medicine in Swimming X. Portuguese Journal of Sport Sciences, Suppl 2, 2006
  - Enderle, JD and B Hallowell, Editors, “National Science Foundation 2004 Engineering Senior Design Projects to Aid the Disabled”, chapter 13, pp. 165-201 <http://nsf-pad.bme.uconn.edu/>, appeared in 2006
  - Enderle, JD and B Hallowell, Editors, “National Science Foundation 2005 Engineering Senior Design Projects to Aid the Disabled”, chapter 11, pp. 121-184 <http://nsf-pad.bme.uconn.edu/>, appeared in 2007
  - Enderle, JD and B Hallowell, Editors, “National Science Foundation 2006 Engineering Senior Design Projects to Aid the Disabled”, chapter 10, pp. 125-178 <http://nsf-pad.bme.uconn.edu/>, appeared in 2008

### Invited seminars

- "The Effect of Thermal Buoyancy on the Stability of Laminar Jets" Mech. Engr. Cornell Univ., Ithaca, NY, October, 1971.
- "A Comparison of Convective Heating Processes Used to Solder Multi - layer Boards", Western Electric Engineering Research Center, Princeton, NJ, Spring 1972.
- "Stability and Relaminarization in Buoyancy Driven Flows", Mech. Engr., State University of New York, Buffalo, NY, October 18, 1973.
- "Stability of Round Laminar Vertical Jets with Buoyancy and Vigorous Transient Natural



- Convection Flows with Relaminarization", Centre National de la Recherche Scientifique, Laboratoire D/Aerothermique, Paris, France, September 18, 1973.
- "Axisymmetric Plume Flows", Institut de Mechanique des Fluides, Universite D/Aix - Marseille, Marseille, France, September 28, 1973.
  - "Condensation Soldering", Dept. of Mechanical and Metallurgical Engineering, Oregon State University, Corvallis, Oregon, March 1974.
  - "Transient Film Condensation on Finite Horizontal Surfaces with Run - Off", Dept. of Mech. and Aero Engr., Cornell Univ., Ithaca, NY, April 29, 1975.
  - "Numerical Heat Transfer Calculations in Water Near its Density Extremum", Dept. of Geological Sciences, State University of New York at Buffalo, NY, October 28, 1976.
  - "A New Equation of State and Density Extrema Effects on Flow and Transport in Water", Dept. of Mechanical and Industrial Engineering, Clarkson College, Potsdam, NY, March 3, 1977.
  - "Density Extrema Effects on Buoyancy - Induced Flow and Transport in Water", Dept. of Eng. Sci., Aero Eng. and Nuc. Eng., State University of New York, Buffalo, NY, March 25, 1977.
  - "Flow and Natural Convection in Water Near its Maximum Density", Carrier Corp., Syracuse, NY, May 23, 1977.
  - "A New Density Relation and Transport Effects in Saline Water", M.E. Dept., SUNYAB, September 29, 1977.
  - "Transport from Horizontal Surfaces in Cold Stratified Water", Office of Naval Research, Arlington, VA, October 25, 1977.
  - "Analysis of a Concentrating Solar Collector - or - An Example of How to Use What You Learn in Class", Lecture Series for Freshman Students - EAS 101: Topics in Engineering and Applied Science, SUNYAB, December 8, 1977.
  - "Buoyancy - Induced Flow and Transport in Cold Water", Dept. of Mechanical Engineering, Univ. of Waterloo, Waterloo, Ontario, Canada, February 9, 1978.
  - "Transient Film Condensation on Finite Horizontal Surfaces with Run - Off", EG & G, Idaho Falls, Idaho, March 27, 1978.
  - "A New Equation of State and Low Temperature Transport in Water", Univ. of Washington, Seattle, 3/28/78; Oregon State Univ., March 29, 1978; Univ. of Alberta, Edmonton, March 30, 1978.
  - "Design of a Concentrating Solar Collector", College of Mathematical Sciences, SUNYAB, November 15, 1978.
  - "Convective Losses from Central Solar Receivers", invited panelist, DOE/Sandia, Dublin, CA, April 17 - 18, 1979.
  - "What Do Engineers Do?", College of Mathematical Sciences, April 24, 1979.
  - "Champagne Effect Phenomena Evaluation in Compressed - Air Energy Storage Systems", Potomac Electric Power Co., June 6, 1979.
  - "Advice to College - Bound High School Seniors", Keynote talk at Rotary's Annual Scholarship Dinner, Clyde, NY, June 7, 1979.
  - "An Air Bubble Rising in Water", Math. Dept., SUNYAB, October 3, 1979.
  - "Development of Convection with Boundary Thermal Capacity and Density Extrema Effects in Confined and Extensive Horizontal Layers of Water", Univ. of Missouri - Rolla, October 15, 1981.
  - "Departure from Equilibrium: Ice Crystal Growth, Powder Metallurgy, Melting Ice, Thermal Instability and Bubble Formation", M.E.A. Dept., SUNYAB, November 12,

- 1981 26.
- "Model Airplanes", Buffalo Section Chapter AIAA, 1981.
  - "Departure from Equilibrium: Ice Crystal Growth, Powder Metallurgy Melting Ice, Thermal Instability and Bubble Formation", M.E.A. Dept. of U. of Delaware, April 23, 1982.
  - "Transient Free Convection Phenomena", Mechanical Engineering Thermoscience, Stanford Univ., CA, September 20, 1982.
  - "Motion in Cold Water Heated from Below", Dept. of Mechanical Engineering, U. of Calif., Berkeley, September 21, 1982.
  - "Motion in Cold Water Heated from Below", Dept. of Mechanical Engineering, U. of Penn, Philadelphia, October 27, 1982.
  - "Motion in Cold Water Heated from Below", CREST, SUNYAB, December 8, 1983.
  - "Effect of Stirring on Bubble Formation During Decompression", Dept. of Physiology, SUNYAB, February 9, 1983.
  - "Factors Influencing Air Absorption and Release in Water Within the 1 - 70 Atm. Range", In vitro bubble research: theories and experiments Symposium/Workshop, SUNYAB, September 30, 1983.
  - "Soaring - Thru Space", Amelia Earhart Program Speaker, Zonta Club of Buffalo, Buffalo Convention Center, January 3, 1984.
  - "Design and Construction of the U.B. Ultralight Aircraft", Niagara Frontier Chapter 46, Experimental Aircraft Association, January 10, 1985.
  - "U.B. Ultralight World Altitude Attempt", Niagara Falls Composite Squadron Civil Air Patrol, March 15, 1985.
  - "Heat Transfer and Fluid Flow Above a Suddenly - Heated Horizontal Surface in an Extensive Ambient", Penn State Univ., April 25, 1985.
  - "Role of University - Based Engineering R&D in Providing Access - To - Technology," Technology Access for Persons with Disabilities, Buffalo, NY, 1989.
  - "Industrial vs. Academic Career," Student Section ASME, State University of New York at Buffalo, Buffalo, NY, 1990.
  - "Assistive Technology," Department of Rehabilitation Medicine, ECMC, 1992.
  - "Assistive Device Design", University of Hawaii at Manoa, Oahu, March 2000.
  - "Fluid Mechanics of Swim Fins", University at Udine, Medical School, Udine, Italy, March 2001.
  - "A Fluid / Solid Model for Predicting Slender Body Deflection in a Moving Fluid", Cornell University, Ithaca, NY, April 2, 2002.
  - "A Fluid / Solid Model for Predicting Slender Body Deflection in a Moving Fluid", University of Minnesota, Minneapolis, MN, September 11, 2002.
  - "A Fluid / Solid Model for Predicting Slender Body Deflection in a Moving Fluid", University of Toronto, Toronto, ONT, December 6, 2002.
  - "A Fluid / Solid Model for Predicting Slender Body Deflection in a Moving Fluid", University of Southern California, Los Angeles, CA, February 20, 2003.
  - "A Fluid / Solid Model for Predicting Slender Body Deflection in a Moving Fluid", Lehigh University, Bethlehem, PA, October 28, 2005
  - "A Fluid / Solid Model for Predicting Slender Body Deflection in a Moving Fluid", University of Pittsburgh, Pittsburgh, PA, February 24, 2006
  - "A Fluid / Solid Model for Predicting Slender Body Deflection in a Moving Fluid", U.C. Berkeley, Berkeley, CA, October 23, 2007

### Grants awarded

- DesJardin, P (PI), JC Mollendorf (COPI), “Combustion Characterization and Optimization of Outdoor Wood Burning Hydronic Heaters”, \$600,000, NYSERDA + matching, 12-01-13 to 03-31-16
- Mollendorf, JC (PI), “Configuration of the BioBlower for the Healthcare Market and Home Use”, \$73,534, UB-CAT, 07-01-13 to 06-30-14
- Salvi, R (PI), , JC Mollendorf (CO-Investigator), and “Blast Wave Effects: Hearing, Memory, Therapy”, \$2,623,769, NIH, 07-01-12 to 06-30-17
- Pendergast, DR (CO-PI) JC Mollendorf (CO-PI) Thermal Protection of Divers in Hot and Cold Water: A New Approach, NAVSEA, US Navy, 2/07-1/10, \$643,000.
- Pendergast, DR (PI), JC Mollendorf (COPI), Office of Naval Research, “Thermal protection in hot and cold water: a new approach”, 2/13/07 - 1/12/10, \$828,000
- Mollendorf, JC (PI), “Zoned measurement and manipulation of body temperature using new technologies”, Sterbutzel Research Fund, 6/06 – 6/07, \$35,000
- Mollendorf, JC (PI), “Zoned measurement and manipulation of body temperature using new technologies”, Sterbutzel Research Fund, 6/05 – 6/06, \$35,000
- Pendergast, DR (PI), JC Mollendorf (COPI), Office of Naval Research, “Design and Testing of a Total Body Diver Thermal Protection Garment”, 1/29/05 - 9/30/06, \$250,000
- National Science Foundation, “Undergraduate Bioengineering Design Projects”, 9/04-8/09, \$125,000
- CAT Award, “Thermal Destruction of Biotoxins by Compressive Heating of Air Stream”, (with J.F. Garvey, J. Felske and J. Lordi), \$30,000
- Office of Naval Research, “Design and Testing of a Total Body Diver Thermal Protection Garment”, with D. Pendergast, PI, 1/29/02 – 1/28/05, \$3,000,000 United
- States Navy, “Establishing a Multi-Center, Multi-Disciplinary Program for Improving Diver Thermal Protection Hardware in Warm and Cold Water”, with D. Pendergast, PI, (and Duke University Medical Center and the Navy Experimental Diving
- Unit), 3/00-2/02, \$545,235
- National Science Foundation, “Undergraduate Bioengineering Design Projects”, 9/99-8/04, \$118,303
- CUBRC, “Multi-Recompression Heater (MRH)”, 6/97-6/02, \$82,186
- Silipos Inc. and SPIR, “Analysis of an Artificial Leg Attachment Device”, with P. Alexandridis 12/98-6/99, \$36,529
- National Science Foundation, “Undergraduate Bioengineering Design Projects”, 6/94-8/99, \$71,616
- Department of Energy, "Applied Study: A Cooperative Model for Producing Assistive Devices," 10/1/90 - 9/30/93) (Co - Pi, W. Mann), \$561,487
- Department of Energy, "The Vocational Traineeship Program, 10/1/90 - 9/30/93 (Co - Pi, W. Mann), \$313,464
- NYSOMRDD, "Multidisciplinary Assistive Technology Adendum to: The Graduate Program to Prepare Occupational Therapists to Serve the Developmentally Disabled in

- NYS. (with W. Mann, E. Steinfeld, D. Kauppi, D. Fish and S. Lawrence - Deidrich, Co - Pi's), \$700,000
- National Science Foundation, "Undergraduate Bioengineering Design Projects," 7/89 – 5/94, \$80,400
  - NYSSTF, "Muscle Stimulating Wheelchair," 6/89 - 1/90. (with D. Fish and F. Mendel), \$60,000
  - Rich Products, "The Leaking Container Problem," 1/89 - 12/90, \$12,000
  - NYSERDA, Wilson Greatbatch Corporation and NYSEG, "Thermal Ice Storage", 3/87 - 3/89, \$179,000
  - Allied Corporation, "Thermal Analysis of Melt Spun Casting", 9/86 - 9/87, \$20,000.
  - Moog - Carelton Corporation, "Mathematical Model of a Breathing Regulator", 1/87 - 1/88, \$20,000
  - Allied Corporation, "Thermal Analysis of Melt - Spun Casting", 9/85 - 9/86.
  - \$ 10,000 Allied Corporation, "Thermal Analysis of Melt - Spun Casting", 9/84 - 9/85, \$10,000
  - National Science Foundation, "Developing Flow and Heat Transfer Near a Suddenly Heated Horizontal Surface", 1/15/85 - 12/31/86, \$120,865
  - Research Development Funds (SUNYAB), "Numerical and Experimental Studies of Buoyancy - Induced Flows in Cold Pure and Saline Water", 4/8/83 - 6/30/84 (with Prof. N.D. Kazarinoff), \$12,466
  - Pratt and Whitney Aircraft Group, "Center Nucleation of Rapidly Solidified Small Subcooled Metallic Spheres," 6/1/82 - 9/1/83 (with Prof. W.N. Gill), \$8,000
  - National Science Foundation, "Analysis of Multiple Steady States in Natural Convection", 6/1/82 - 5/31/84 (with Prof. N.D.Kazarinoff), \$23,000
  - National Science Foundation, "Rate Determining Mechanisms in Ice Crystal Growth with Convective Heat and Mass Transfer", 3/1/82 - 12/31/84 (with Prof. W.N. Gill). \$124,500
  - Pratt and Whitney Aircraft Group, "Analysis of Rapid Solidification of Subcooled Small Metallic Drops", 9/1/81 - 6/1/82 (with Prof. W.N. Gill), \$7,200
  - Electrical Power Research Institute, "Experimental/Laboratory Studies on Air Saturation and Release for Water Compensated CAES Plants", 10/13/81 - 12/31/83 (with Prof C.E.G. Lundgren), \$128,478
  - National Science Foundation, "Analysis of Multiple Steady States in Natural Convection", 6/15/81 - 11/30/82 (with Prof. N.D. Kazarinoff), \$21,363
  - Acres American Inc., "Champagne Effect Phenomena Evaluation in Compressed - Air Energy Storage Systems", 1/1/79 - 5/31/79, \$6,500
  - National Science Foundation, "Natural Convection Flows in Water with Density Extrema Effects", 6/15/78 - 11/30/80, \$48,251
  - Western Electric Co., donated bidirectional spectral reflectometer, 1977, \$20,000
  - SUNY - Energy, Environmental and Resource Assistantship (CEERS), "Transport Rates, Flow and Stability Characteristics of Buoyancy - Induced Flows Affected by DensityExtrema", 1975 - 1976; "Effects of Density Extrema on Natural Convection Heat and Mass Transfer", 1976 - 1977; "Effect of Density Extrema on the Onset of Transition in a Confined Horizontal Layer of Water", 1977 – 1978, \$9,000
  - SUNY - Undergraduate Project for 400 level course, "Design and Evaluation of a Wollaston Prism Schlieren Interferometer", 1976 (with K. Jahn); "Flow Visualizations of Density Extrema Effects", 1977 (with J.S. Cangelosi); "An Investigation of High

- Temperature Solar Collector Using an Expanded Metal Foil Matrix", 1977 (with E.A. Gallion), \$571
- National Science Foundation Workshop, "Directions of Heat Transfer in Electronic Equipment", 10/17,18,19/77 (with Prof. A.D. Kraus, U. of S. Florida and Prof. A.E. Bergles, Iowa State U.), \$9,000
  - National Science Foundation Instructional Scientific Equipment Program, 8/12/77 - 8/31/79 (with Prof. K.M. Kiser), \$42,500
  - National Science Foundation, "The Nature of Flows and Transport from Concentrated Heat Sources on Surfaces", 12/15/76 - 5/31/78, \$27,500
  - SUNY, Data Acquisition, Processing and Control System", 11/74 - 8/85 (with W.K. George, Jr.); "Heat Source on Surfaces", 1/75 - 12/76; "Heat Source on Surfaces", 4/75 - 8/76, \$10,171
  - SUNY - GSA, "Experimental Study of Natural Convection from a Point Source on a Vertical Wall", 10/74 - 4/75 (with V.P.Carey), \$150
  - Harrison Radiator Co., donated Heat Transfer Fluids, 1974, \$800
  - General Electric Co., donated Heat Transfer Fluids, 1974, \$500

## Patents

- Height and Width Adjustable Saddle Sling Seat Walker with Controllable Directional Tracking and Optional Supports, 7,568,712 B2, licensed to Northeastern Biomechanical Manufacturing Corporation
- Method of Altering a Fluid-Borne Contaminant, US 7,335,333, licensed to Buffalo BioBlower
- Process for Enhancing Material Properties and Materials so Enhanced, US 7,101,607
- Method of Using Cervical Orthosis, US 5,411,038
- Cervical Orthosis, US 5,320,596
- Four - Limb Exercising Attachment for Wheelchairs, US 5,242,179
- Apparatus and Method of Soldering, Fusing or Brazing, US 3,904,102, owned by Western Electric

## Service

### *Department*

- Ad-hoc Graduate Grievance Committee, Chair, Fall 2014
- Summer Teaching Fellows Selection Committee, Spring 2015
- Faculty Advisor, AIAA Design, Build and Fly; Design, Build and Fly International Competition, Wichita, Kansas 9/1/12
- Member Undergraduate Studies Committee, Fall 1997
- Director of Undergraduate Studies, Fall 1983 - Fall 1988
- Advisor AIAA student section, Fall 1983 - Fall 1985
- Co - organized MEA Departmental Seminar Series, 1983 - 1984
- Undergraduate Curriculum Committee, Spring 1983
- Advisor of Mechanical and Aerospace Engineering Graduate Student Association, Fall 1982, Spring 1983

- Taught construction techniques and organized and directed model airplane contest for ASE/MEA 331, Introduction to Aerospace Engineering, Fall 1982, Fall 1983
- Arranged a special joint seminar with Physiology, "The problem of the problem: sources of originality in art and science", by Jacob W. Getzels, R. Wendell Harrison Distinguished Service Professor, U. Chicago, December 11, Fall, 1981
- Space Allocations Committee, Spring 1980
- Organized M.E. Departmental Seminar Series, 1978 - 1979
- Master - User for M.E. Computer Allocations, 1977 - 1978, 1978 - 1979
- Faculty Recruitment Committee, 1977 - 1978
- Chairman, Committee on Engineering Representation and Graphics Course", 1977 - 1978
- Faculty Advisor: ASME Student Chapter, September 1975 - September 1979
- Faculty Advisor: Pi Tau Sigma, April 1975 - September 1979

*School of Engineering and Applied Sciences*

- Promotions committee, 2010
- Faculty Personnel Committee (elected), Fall 1999-2000.
- Member M. ENG. Committee, 1989-1990.
- Harrison Radiator Coop Committee, 1984 - 1988.
- Chairman, Academic Programs Undergraduate Subcommittee, 1983 - 1988.
- Academic Programs Committee, 1983 - 1988.
- Student Affairs Committee, 1978 - 1979.
- Physics Course Review Committee, Fall 1978
- Academic Programs Committee, Spring 1978.
- Search Committee for M.E. Chairman, 1976.

*University*

- Faculty Senate Branding Committee representative, Fall 2014 & Spring 2015
- Faculty Senate Teaching and Learning Committee, Fall 2014 & Spring 2015
- Faculty Senate Executive Committee 5/18/11-present
- Faculty Senate (elected), Fall 2010-present.
- Faculty Senate Executive Committee, 2010
- Search Committee for Associate Vice President for Research, Fall 2000-Spring 2001.
- Chair, Faculty Senate Research & Creative Activity Committee, Fall 2000-Spring 2001 (conducted faculty survey)
- Faculty Senate Research & Creative Activity Committee, Fall 1999-Spring 2000.
- Faculty Senate (elected), Fall 1999-2001.
- Advisory Committee for Multidisciplinary Center for Aging, 1989-1990.
- Teaching Quality Committee, Fall 1982 – Fall 1988.
- Adjudication Committee, 1986 - 1991.
- Academic Freedom and Responsibility Committee, 1986 - 1987.
- Selection Committee for the Chancellor's Award for Teaching Excellence, 1987.
- Founding member and Faculty Advisor, U.B. Flying Association, 1985-1992.

*Community*

- Westminster Elementary School Visits, Demonstration Lectures, STEM lecture and Rubberband-powered model airplane demonstration, Fall 2015.
- Aero Club of Buffalo, Board of Directors, 1993 to 1994.
- Amherst Museum, Aviation Board of Directors, Organized "Aviation Day", 1994.

- Annual Paper Airplane Contest for High School Students, 1987, 1988, 1989, 1990 and 1991.
- Career Day Speaker, "Opportunities in Aviation and Aerospace", Bishop Timon High School, February 4, 1988.
- Lecture on "Balloon Dynamics", Williamsville North High School, February 3, 1988.
- Luncheon Speaker, "Model Airplanes", U.S. Army Corps of Engineers, Society of American Military Engineers, April 29, 1987.
- Expert Witness, "Solar Collector Story", Channel Four News.
- Organized two, credit - free courses: Private Pilot Ground School and Glider Rating Ground School, Spring 1986 (For - credit, Spring 1987).
- Presented seminar at "Engineering '83", National Engineers Week, Niagara Falls, February 24, 1983.
- Sound technician for annual Skating Association for the Blind and Handicapped Ice Show, Buffalo Memorial Auditorium, first year 1979.
- Organized "Job Workshop, Cocktail - Buffet", in cooperation with local industry, SUNYAB, March 7, 1979.
- Participated in Kenmore East Senior High School Career Day, November 16, 1978.
- Organized "An Engineering Vocation - An Auditorium Panel Presentation for High School Juniors", in cooperation with local industry, West Seneca High School, March 10, 1977.

*Profession of Mechanical and Aerospace Engineering*

- Member of ASME National Heat Transfer Division Committee, General papers, July 1, 1982 to June 30, 1985.
- Member of ASME Committee K - 8, Theory and Fundamental Research in Heat Transfer, October 1975 to October 1985.
- Session Chairman for "Stability in Convective Flows Symposium", at the 106th ASME Winter Annual Meeting, Miami Beach, FL, November 18, 1985.
- Session Chairman for "General Papers Session" at the 23rd National Heat Transfer Conference, Denver CO, August 1985.
- Session Co - Chairman for "Mixed and Natural Convection", at the 22nd National Heat Transfer Conference and Exhibit, Niagara Falls, NY, August 7, 1984.
- Session Chairman for "Natural Convection", at the 22nd National Heat Transfer Conference and Exhibit, Niagara Falls, NY, August 7, 1984.
- University Liaison for ASME/AIChE 22nd National Heat Transfer Conference, Niagara Falls, NY, 1984.
- Session Co - Chairman for "Heat Transfer - General Papers II", at the 104th ASME Winter Annual Meeting, Boston, MA, November 16, 1983.
- Session Chairman for "General Papers - III", at the 21st National Heat Transfer Conference, Seattle, WA, July 26, 1983.
- Session Chairman for "Heat Transfer with Unsteadiness or Nonuniformities", at the 103rd ASME Winter Annual Meeting, Phoenix, AZ, November 18, 1982.
- Session Co - Chairman for "Two Phase Heat Transfer", at the 103rd ASME Winter Annual Meeting, Phoenix, AZ, November 17, 1982.
- Session Chairman for "Fundamentals of Convective Mass Transfer", at the AIAA/ASME 3rd Joint Thermophysics and Heat Transfer Conference, St. Louis, MO, June 8, 1982.
- Session Co - Chairman for "Heat Transfer and Fluid Mechanics Films", at the National Heat Transfer Conference, Orlando, FL, July, 1980.

- Session Co - Chairman and Chairman for two sessions, "Developments in Natural Convection I and II" at the 19th National Heat Transfer Conference, Orlando, FL, July 1980.
- Session Co - Chairman for "Heat Transfer and Fluid Mechanics Films", at the 18th National Heat Transfer Conference, San Diego, CA, August 6 - 8, 1979.
- Session Co - Chairman for "Fluid Mechanics", at the 71st Annual AIChE Meeting, Miami Beach, FL, November 12 - 16, 1978.
- Session Chairman for, "Stability of Buoyancy - Induced Convective Flows", at the 2nd AIAA/ASME Thermophysics and Heat Transfer Conference, Palo Alta, CA, May 24 – 26, 1978.
- Session Co - Chairman for two Sessions, "Developments in natural Convection I and II", at the 16th National Heat Transfer Conference, St. Louis, MO, August 1976.
- Session Chairman for an Invited Lecture at the Fifth International Heat Transfer Conference, Tokyo, Japan, September 1974.

**Professional memberships**

- Golden Key
- Sigma Xi
- Tau Beta Pi
- Pi Tau Sigma
- American Society of Mechanical Engineers - Fellow
- American Association for the Advancement of Science
- American Institute of Aeronautics and Astronautics, Council Member Niagara Frontier Section, 1985 to 1986.