

CURRICULUM VITAE

ANDREW POLLARD
BASc, DIC, PhD, FCAE, FASME, FAPS



Professor (Emeritus)
**Queen's Research Chair in Fluid Dynamics
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SIGNIFICANT CAREER ACHIEVEMENTS

Inaugural President, Executive Director and Founding Member, Computational Fluid Dynamics Society of Canada. Founded in 1992, this Society continues to serve and support advanced research in a critically enabling science and technology for world class fundamental research and engineering applications in aerospace, biomedicine and energy.

Project Originator and Leader, High Performance Computing Virtual Laboratory (HPCVL). A multi-million dollars, four university consortium project. It has successfully enabled hundreds of researchers to achieve world class computational results and through it to contribute to a Nobel Prize in Physics. Formed in 1999, it continues to provide, under its new banner The Centre for Advanced Computing, high availability, secure, advanced computing resources and support for academic and medical researchers across Canada.

Chair of the Board of Directors, President and Founding Member, C3.ca Association Inc. Since 1998, C3.ca advocated and supported over 50 university and industry organisations and 1000's of researchers for High Performance Computing in Canada. Pollard advocated for and directed the Long-Range Plan for HPC for Canada *The Engines of Discovery: the 21st Century Revolution*. C3.ca transformed into Compute - Calcul Canada (ca. 2006) that continues to serve the computational science, engineering and health science communities in Canada.

“Through Andrew’s vision and brilliant and resourceful leadership to establish HPCVL, the SNO team was able to rapidly do the calculations that achieved its “eureka” moment that confirmed that neutrinos have mass”

Prof. A. McDonald, Nobel Laureate Physics 2015.

EDUCATION

1978	Ph.D. Supervisor – Prof. Spalding, D. Brian FRS, FREng, FIME, FEI, FICE Franklin Institute Laureate Global Energy Prize Laureate	University of London London, England
1978	D.I.C. Mechanical Engineering	Imperial College of Science and Technology, London, England
1975	B.A.Sc. Mechanical Engineering	University of Waterloo Waterloo, ON Canada
1970	Diploma, Mechanical Engineering Technology	Ryerson Polytechnical Institute Toronto, ON Canada

EMPLOYMENT HISTORY

2014	Visiting Professor	University of Patras, GREECE
2014	MERIT Fellow	University of Melbourne, AUSTRALIA
2010-2014	Adjunct Professor	Syracuse University, NEW YORK, USA
2009	Honorary Univ. Professor	University of Auckland, NEW ZEALAND
2009	Visiting Professor	University of Canterbury, NEW ZEALAND
2008-2012	Director	Sustainable Bio-Economy Centre Queen's University
2005-2012	Director	Queen's Collaborative Specialization in Computational Science & Engineering
2005- present	Queen's Research Chair in Fluid Dynamics and Multi- scale Phenomena	Queen's University (Canada Research Chair Tier 1 equivalent)
1995-1996	Director	Centre for Advanced Gas Combustion Technology, Queen's University
1993-1994	Visiting Professor	Centre D'Etudes Aerodynamiques et Thermique (CNRS/University Poitiers), FRANCE
1992-1995	Associate Director	Centre for Advanced Combustion Technology Queen's University.

1990-present	Professor	Dept. Mechanical Engineering Queen's University
1986-1987	Alexander von Humboldt - Fellow	Universität Erlangen-Nurnberg, FEDERAL REPUBLIC OF GERMANY
1983-1990	Assoc. Professor Tenured, 1987	Dept. Mechanical Engineering Queen's University
1981-1983	Assistant Professor	Dept. Mechanical Engineering Queen's University
1978-1981	Assistant Professor	Dept. Mechanical Engineering University of Calgary
1975-1978	Research Assistant	Dept. Mechanical Engineering Imperial College of Science and Technology, ENGLAND
1975	Research Engineer	University of Waterloo
1972-1975	Research Engineer Training	University of Waterloo G.S.W. Research, Sheridan Park, ONTARIO
1970-1972	Assistant to Works Manager	Babcock and Wilcox Co. Ltd., CAMBRIDGE, ONTARIO

FELLOWSHIPS, HONOURS, AWARDS AND INTERNATIONAL ACKNOWLEDGEMENTS

2017

Alumni Achievement Medal for Academic Excellence, University of Waterloo. “In recognition of his world-renowned research in fluid mechanics, for establishing numerous academic-industrial institutions, and for his ongoing mentorship and dedicated support of his students.”

2017

Fellow, Canadian Academy of Engineering. Citation includes: “He is best known for his seminal work on turbulent flows, especially free shear flows, which have provided the fundamental knowledge required to accelerate the field.”

2017

“Festschrift” Volume of the *International Journal of Heat and Fluid Flow* dedicated to A. Pollard for “...his ability to use effectively both experiments and simulations as complementary tools for understanding fundamental processes”. Vol. 67, Part B, October 2017

2017

Royal Society, London: Biographical Memoir of Professor D. Brian Spalding FRS, FREng (deceased November 2016) Acknowledged as a giant in the fields of combustion, turbulence modelling, multi-phase flows and computational fluid dynamics. His accolades include the highly prestigious World Energy Prize (~\$850,000 Cdn) “for numerous original concepts of heat-and-mass transfer processes, which formed the basis of practical calculations in fluid mechanics and computational fluid mechanics” and the Franklin Institute Benjamin Franklin Medal “For his seminal contributions to the computer modeling of fluid flow, creating the practice of computational fluid dynamics (CFD) in industry, and paving the path for the widespread application of CFD to the design of objects from airplanes to heart valves.”

2014

Fellow, American Physical Society. Citation includes: “For sustained and innovative contributions to computational and experimental fluid dynamics and their symbiotic interplay, and exceptional contributions to higher education, including establishment and leadership of networks supporting international collaboration”

2014 (February)

MERIT Fellowship as Visiting Research Professor, University of Melbourne, Australia. Awarded to support visits of international scholars of significance.

2013-2017

Member, International Scientific Advisory Board, United Kingdom Consortium on Mesoscale Engineering Sciences UKCOMES, <http://www.ukcomes.org/> “It was established in June 2013, supported by the EPSRC Grant No. EP/L00030X/1. It is one of seven high-end computing (HEC) consortia for science and engineering in the UK funded by the Research Councils. Mesoscale problems lie at the interfaces between microscales and macroscales, between engineering and sciences, where new and exciting discoveries and applications are likely to be made in the 21st century.”

2010

Inducted to Hall of Achievement, Thousand Islands Secondary School, Brockville “..to honour an exceptional over-achiever and graduate who is a role model for our current and future students...”

2009 (January-March)

Honorary Visiting Research Professor University of Auckland, New Zealand

2009 (April-June)

Visiting Research Professor University of Canterbury, New Zealand

2008

Fellow, American Society of Mechanical Engineers

2006

Best paper award, CFD Society of Canada

2005

Best paper award, 6th World Conference on Heat Transfer, Fluid Mechanics and Thermodynamics: The most comprehensive thermal-fluids conference in the world.

2004

Best paper award, CFD Society of Canada

2001

“Silver Wrench Award”

Awarded to “the Professor who best displays interest and enthusiasm towards Queen’s Mechanical Engineering as chosen by the Graduating Class.

1997

Best paper award, CFD Society of Canada

1993

Best poster award, Int’l Symp. Turbulent Shear Flow: The pre-eminent global symposium for turbulence research

1992

Distinguished Lecturer, Sowerby Research Centre, British Aerospace

1991

Best paper award, 2nd World Conference on Heat Transfer, Fluid Mechanics and Thermodynamics: The most comprehensive thermal-fluids conference in the world.

1987

Strategic Partner for Outstanding Contributions to Computational Fluid Dynamics, Silicon Graphics Incorporated

1986

Alexander von Humboldt Fellowship, Federal Republic of Germany

1974

Research award for academic achievement, University of Waterloo

1970

Academic proficiency award, Ryerson Polytechnic Institute

1969

Academic proficiency award, Ryerson Polytechnic Institute

BIOGRAPHICAL DATABASES

1985

Who's Who in Canada

1991

Who's Who in Canadian Engineering

2005

Who's Who in Engineering Education

2006

Who's Who in Computational Science and Engineering

EDITORIAL SERVICE (See also "Books and/or Chapters in Books")

2016

Lead editor, *Whither Turbulence and Big Data in the 21st Century*, Springer Verlag

<http://www.springer.com/gp/book/9783319412153>

2015

Editor in Chief, *International Journal Heat and Fluid Flow*,

<https://www.journals.elsevier.com/international-journal-of-heat-and-fluid-flow>

This premier journal in the field of turbulence, heat and mass transfer

2015

Co-editor, Special Issue, *Journal of Turbulence*

(selected papers from Colloquium on Near Wall Turbulence, Trondheim, Norway)

<http://explore.tandfonline.com/content/est/journal-of-turbulence-special-issues/special-issue-wall-turbulence-colloquium>

2012-2015

Associate Editor, *International Journal Heat and Fluid Flow*

2007

Lead Editor, Special issue: *International Journal of Computational Fluid Dynamics* (Selected papers from CFD 2006) <http://www.tandfonline.com/toc/gcfd20/22/1-2?nav=tocList>

2005

Lead as Chair of the Board, C3.ca. *HPC-CHP Engines of Discovery: the 21st Century Revolution, The Long Range Plan for High Performance in Canada*

<https://www.computecanada.ca/wp-content/uploads/2015/02/LRP.pdf>

2001

Lead Editor, *IUTAM Symposium on Turbulent Mixing and Combustion*, Kluwer Academic Press <http://www.springer.com/la/book/9781402007477>

2002

Regional Editor, *CFD Journal*, Japan

2000

Lead Editor, High Performance Computing Systems and Applications, Springer Verlag
<https://link.springer.com/book/10.1007/b115800>

1998

Co-Editor, Flow Control, Fundamentals and Practices, Springer Verlag
www.springer.com/gp/book/9783540696728

1992

Editorial Advisory Board, CFD Journal, Japan

1992

Editorial Advisory Board, Int'l Journal Computational Fluid Dynamics
<http://www.tandfonline.com/toc/gcfd20/current>

1992-1997

Editorial Advisory Board, International Journal of Applied Scientific Research {This Journal became Flow, Turbulence and Combustion, An International Journal published in association with ERCOFTAC <http://www.springer.com/engineering/mechanics/journal/10494>

1983

Co-Editor, Numerical Prediction of Flow, Heat Transfer, Turbulence and Combustion, Selected Works of Professor D. B. Spalding, Pergamon Press
https://books.google.ca/books/about/Numerical_prediction_of_flow_heat_transf.html?id=3ZZRAAAAMAAJ&redir_esc=y

1983-1987

Associate Editor, International Journal of Physicochemical Hydrodynamics

NOTABLE OTHER EDITORIAL AND LEADERSHIP ACTIVITIES

2015-present

International papers committee, Int'l Congress Theoretical and Applied Mechanics, Montreal 2016, Milan 2020 (Elected, one of six members worldwide) This is the most significant international congress for the world's mechanics community and the international papers committee adjudicates over 2000 submissions for excellence and novelty.

2005-2010

Member, Multi - disciplinary Assessment Committee, office of VP-Research, Queen's University (2005-2010) Adjudicated research proposals for eventual forwarding to external funding agencies in Canada and abroad.

2010- 2012

Member, Research Management Committee, Carbon Management Canada, a National Centres of Excellence based at University of Calgary. We adjudicated the science and research outcomes for multi-million dollars in proposals, including carbon capture and storage etc.

2008-2012

Inaugural Director and Founder, Sustainable Bioeconomy Centre, Queen's University. This Centre served the Applied Science, Public Policy and Environmental Science communities at Queen's. It hosted annual symposia that brought together government policy makers with industry and academics for spirited discussions on the future for a bio-economy for the whole north east of North America.

2006

Chair. Information Technologies International Review Panel, Canada Foundation for Innovation. I lead a team of experts as we adjudicated the disposition of \$80,000,000 in infrastructure applications.

2005-2007

International Advisor, National Centre for High Performance Computing, Cape Town, South Africa. I worked with a small group of international experts to help set up the NCHPC for South Africa that now contributes to the largest scientific effort in the world: the square kilometer array of radio telescopes located in Africa and Australia/NZ.

2005

Canadian Member, International Selection Board, Nusselt-Reynolds Prize awarded by World Congress on Expt'l. Fluid Mechanics, Heat Transfer & Thermodynamics

2005-2012

Inaugural Director and Founder, M.Sc. Collaborative Specialization in Computational Science and Engineering, Queen's University. A University-wide (17-department) specialization for exceptional students.

2004

Member, Blue Ribbon Task Force on National Consultation on Access to Scientific Research Data, (David Strong, Chair) Lead by NRC with CFI, CIHR, IC, NSERC, SSHRC. This report set the stage for research data management and curation by all Canadian Universities.

1997-2007

Organiser, Thousand Islands Fluid Mechanics Meeting: Annual event that in 2017 celebrated its 20th anniversary

1996

Co-organiser, Symposium and Workshop, Flow Control (with Profs. M. Gad-el-Hak and J-P Bonnet) Cargese, Corsica and University of Notre Dame, Indiana

1992-1996

Director, Associate Director and Founding Member, Centre for Advanced Gas Combustion Technology, Queen's University.

1990-1993

International selection board for Nusselt-Reynolds prize, considered as a career achievement prize for research in thermo-fluid dynamics. I wrote the biographical entries for Nusselt and Reynolds and served on selection committee for two awards.

1989-Present

Lead scientist, Fluid Mechanics, World Conferences Fluid Mechanics, Heat Transfer and Thermodynamics: This is a high visibility position, for a major international series of meetings held triennially.

Lead Scientist and Member of many scientific and organizing committees including:

- a) Turbulent Shear Flow Phenomena – considered to be the pre-eminent conference in the field of fundamental turbulence
- b) Turbulence Heat and Mass Transfer – considered as a major highlight in the stable of meetings under the auspices of the International Centre for Heat Mass Transfer
- c) Int'l conferences on Sustainable Development of Energy, Water and Environmental Systems

SUPERVISION OF RESEARCH ASSOCIATE / POST DOCTORAL FELLOW / RESEARCH ENGINEER

– Total of 20

Current Positions –

- 13 in professorial positions in Australia, Canada, France, Iran, NZ, USA, UK
- 3 in high level research leadership positions; for example, lead experimental aerodynamicist for Williams Formula 1 Team, Oxford, UK
- 4 in various management positions in industry

SUPERVISION OF GRADUATE STUDENTS

– Total of 29 Ph.D. and 31 M.A.Sc.

Current (known) Positions –

- 17 in professorial positions in Canada, China, USA, Philippines, Australia
- 16 in senior scientific portfolios and post doctoral positions
- 1 forensic pathologist.

RESEARCH FUNDING (Please contact for details)

From 1980 through 2017, either as principal or co-principal investigator, I have generated over **\$57,000,000** in research funding:

1980-2017

I have been continuously supported by NSERC through the Discovery, Research Tools and Instruments, CRD and other sources since 1980, approximately \$7.1 million.

Specific examples, **not** included in the above are:

1990-1993

Steel Reheating Furnace Research, co-funded by NSERC, Ministry of Energy of Ontario, Centra Gas, Consumers Gas, Union Gas, Dofasco and Stelco, Co-P.I.: Becker, Grandmaison and Pollard

Amount: \$4,291,200

1999-2002

Pioneering HPC Partnerships in Canada, NRC-NSERC Research Partnership Program in collaboration with C3.ca, P.I.: Pollard

Amount: \$960,000

2000-2003

High Performance Computing Access Support Network, NSERC, P.I.: Pollard

Amount: \$1,800,000

2000-2005

High Performance Computing Virtual Laboratory, Canada Foundation for Innovation, Ontario Research Development Challenge Fund, Sun Microsystems, IBM, Entrust Technologies, P.I.: Pollard

Amount: \$36,800,000

2009-2011

Biomass Energy from Field to Grid, Lafarge Cement and Ontario Centres of Excellence, Co-P.I.: Matovic and Pollard

Amount: \$800,000

2010

*The Wind Engineering, Energy and Environment Research **Institute** (WindEEE RI)*, University of Western Ontario, Canada Foundation for Innovation and others, Co-applicant, P.I.: Hangan

Amount: \$23,690,970

2010-2014

Modelling the Pediatric Upper Airway using Anatomic Optical Coherence Tomography and Computational Fluid Dynamics, U.S. National Institutes of Health, P.I.: Wang (UC Irvine)

Amount: \$US 3,850,440

2013-2018

Sensing for Sustainable Engineering in Remote Areas, NSERC CREATE programme, P.I.:
Green

Amount: \$1,650,000

PATENTS

Pollard, A., Duncan, A and Fellouah, H, “Biomass Pellet and Method of Producing Same”
United States Patent No. 9,701,086, Issue Date: **11 July 2017**
Canadian Patent for same, No. 2,850,975 issued September 2020.

Pollard, A. “A novel aerosol delivery system,” Invention disclosure Tech ID 2002-022,
PARTEQ, Queen’s University, 2002.

Secretain, F., Choy, I. and Pollard, A., “A variable camber airfoil,” Invention disclosure,
PARTEQ, Queen’s University, 2002.

Pollard, A., Secretain, F., Ball, C. G., Uddin, M., Ali, M., Milne, B. and Hamilton, A.
“DETECTS- A method and system for identifying and quantifying particles in flow
systems,” Provisional patent filed with U.S. Patent and Trademark Office, 06/11/2007 and
final patent application filled 06/11/2008.

Secretain, F. and Pollard, A., “Bubble Destruction,” invention disclosure filed with PARTEQ,
Queen’s University 2011.

PUBLICATIONS (BOLD refers to Students and PDFs)

Journal Articles

1. **Samie, M.**, Lavoie, P. and Pollard, A. A scale-dependent coherence analysis of turbulent round jets including the effects of shear layer manipulation, *Intl. Jn. Heat and Fluid Flow*, Vol. 82, 2020, 108524.
2. Pollard, A. Turbulent Round Jet Entrainment – A Historical Perspective. Invited Contribution to Professor D.B. Spalding Commemorative Volume: *50 Years of CFD in Engineering Sciences*, Runchal (ed.), Springer, 2019
3. Xu, M., Cheong, K-P., Mi, J. and Pollard, A. Local dissipation scales in turbulent jets, *Experimental Thermal Fluid Science*, May 2018, Vol. 93, Pages 178-185
<https://doi.org/10.1016/j.expthermflusci.2017.12.019>.
4. **Sadeghi, H.**, Lavoie, P. and Pollard, A. Effects of finite hot-wire spatial resolution on turbulence statistics and velocity spectra in a round turbulent free jet, *Experiments in Fluids*, March 2018, Vol. 59, Pages 40-50, <https://doi.org/10.1007/s00348-017-2486-8>
5. T. Panidis, T., Pollard, A and Schwab, R.R. The role of vorticity in the near field development of sharp-edged, rectangular, wall jets, *International Journal of Heat and Fluid Flow*, October 2017, Vol. 67, Pages 3-22 <https://doi.org/10.1016/j.ijheatfluidflow.2017.06.010>
6. **Dorostkar, A.**, Boegman, L., and Pollard, A. “Three-dimensional simulation of high-frequency nonlinear internal waves in Cayuga Lake”, *Journal of Geophysical Research: Oceans*. Vol. 122, No. 3, Pages 2183-2204, January 2017 *doi*:[10.1002/2016JC011862](https://doi.org/10.1002/2016JC011862).
7. Davis, J., Matovic, D. and Pollard, A. The performance of resistance, inductance, and capacitance handheld meters for determining moisture content of low-carbon fuels, *Fuel*, **188**(15) January 2017, Pages 254-266
<http://www.sciencedirect.com/science/article/pii/S0016236116309723>
8. **Sadeghi, H.**, Lavoie P. and Pollard, A. “Scale-by-scale budget equation and its self-preservation in the shear-layer of a free round jet”, *International Journal of Heat and Fluid Flow* [Volume 61, Part A](#), October 2016, Pages 85–95.
9. Lavoie, P., Pollard, A. and **Sadeghi, H.** “Turbulence and Data Analytics in the 21st Century: The Round Free Jet. in *Whither Turbulence and Big Data for the 21st Century?*” Pollard, Castillo, Danaila, Glauser (eds), Springer Verlag 2016
10. **Andrews, R.**, Pollard, A. and Pearce, J. “Photovoltaic System Performance Enhancement With Non-Tracking Planar Concentrators: Experimental Results and Bi-Directional Reflectance Function (BRDF) Based Modelling”, *IEEE Journal of Photovoltaics*, DOI:10.1109/JPHOTOV.2015.2478064

11. **Leslie, G.**, Rutter, A., Pollard, A., **Davis, J.** and Matovic, D. "The Effects of Weathering on the Pyrolysis of Low- Carbon Fuels: Railway Ties and Asphalt Shingles." *Fuel Processing Technology* doi:10.1016/j.fuproc.2015.06.022 (June 2015)
12. **Sadeghi, H.**, Lavoie P. and Pollard, A. "Equilibrium similarity solution of the turbulent transport equation along the centreline of a round jet." *Journal of Fluid Mechanics* 772:740-755, doi: 10.1017/jfm.2015.224 (May 2015)
13. **Secretain, F.**, Pollard, A., Uddin, M., Ball, C., Ali, M., Milne, B., Hamilton, A. and Tanzola, R. "A novel software program for in vivo detection of potential air emboli during cardiac surgery." *Journal of Cardiac Ultrasound* 13:3, doi:10.1186/1476-7120-13-3 (January 2015)
14. **Vouros, A.**, Panidis, T., Pollard, A. and Schwab, R. "Near field vorticity distributions from a sharp-edged rectangular jet." *International Journal of Heat and Fluid Flow*, doi:10.1016/j.ijheatfluidflow.2014.10.002 (Print version: 51:383-394 2015) (October 2014)
15. Pollard, A., **Secretain F.**, and Milne B. "Air and blood fluid dynamics: at the interface between engineering and medicine." *Journal of Physics: Conference Series* Vol. 530 2014, doi:10.1088/1742-6596/530/1/012005
16. **Nicksy, D.**, Pollard, A., Strong, D. and Hendry, J. "In-Situ Torrefaction and Spherical Pelletization of Partially Pre-Torrefied Hybrid Poplar." *Journal of Biomass and Bioenergy* Volume 70, Pages 452-460, doi:10.1016/j.biombioe.2014.08.011 (November 2014)
17. **Leslie, G.**, Pollard, A. and Matovic, D. "Calorimetric and heat transfer studies of the spontaneous combustion of two low carbon fuels." *Journal of Loss Prevention in the Process Industries* Vol 32:44-51 (August 2014)
18. **Davis, J.**, Pollard, A. and Chandler, A. J. "Comparison of Variability in Dioxin and Furan Data acquired using Single Train and Simultaneous Multiple Train Stack Sampling Methods." *Journal of the Air and Waste Management Assoc.* (May 2014) Accepted.
19. **Andrews, R. W.**, Pollard, A. and Pearce, J. M. "Photovoltaic system performance enhancement with non-tracking planar concentrators: Experimental results and BDRF based modelling." *IEEE 39th Photovoltaic Specialists Conference (PVSC)* (pp. 0229-0234). IEEE. doi:10.1109/PVSC.2013.6744136 (2013)
20. **Sadeghi, H.**, Lavoie, P. and Pollard, A. "The effect of Reynolds number on the scaling range along the centreline of a round turbulent jet." *Journal of Turbulence* doi:10.1080/14685248.2014.906810 (April 2014)
21. **Zhang, J., Xu, M.**, Pollard, A. and Mi, J. "Effects of external intermittency and mean shear on the spectral inertial-range exponent in a turbulent square jet." *Physical Review E*, 87(5) 2013. doi: 10.1103/PhysRevE.87.053009
22. **Mojab, M.**, Pollard, A. Pharoah, J., Beale, S. and Hanff, E. "Unsteady laminar to turbulent flow in a spacer filled channel." *Flow, Turbulence and Combustion* (doi) 10.1007/s10494-013-9514-4 (October 2013)
23. **Mahdaviifar, A.**, Pollard, A. Pharoah, J. and Beale, S. "Wall Proximity Effects on Flow over a Simple Membrane Spacer." *Computers and Fluids*, Volume 88, Pages 180-188 (December 2013)

24. **Xu, M.**, Pollard, A., Mi, J., Secretain, F., Sadeghi, H. “Effects of Reynolds number on some properties of a turbulent jet from a long square pipe.” *Physics of Fluids* 25, 035102 (2013)
25. **Andrews, R.**, Pollard, A., and Pearce, J. “The effects of snowfall on solar photovoltaic performance.” *Journal of Solar Energy* 92:84–97 (June 2013)
26. **Andrews, R.**, Pollard, A. and Pearce, J. “A new method to determine the effects of hydrodynamic surface coatings on the snow shedding effectiveness of solar photovoltaic modules.” *Solar Energy Materials and Solar Cells* 113 71–78 doi: 10.1016/j.solmat.2013.01.032 (2013)
27. **Sadeghi, H.** and Pollard, A. “Effects of shear layer and potential core modifications on turbulent round jet flow using passive control rings.” *Physics of Fluids* 24, 115103 <http://dx.doi.org/10.1063/1.4767535> (2012)
28. **Shinneeb, A-M.**, and Pollard, A. “Investigation of the Flow Physics in Human Pharynx/Larynx Region.” *Experiments in Fluids* doi 10.1007/s00348-012-1336-y (July 2012)
29. **Andrews, R.**, Pollard, A. and Pearce, J. “Improved parametric empirical determination of module short circuit current for modelling and optimization of solar photovoltaic systems.” *Solar Energy* 86:2240-2254, <http://dx.doi.org/10.1016/j.solener.2012.04.016> (May 2012)
30. **Duncan, A.**, Pollard, A. and Fellouah, H. “Torrefied Biomass Pellets through the use of Experimental Design.” *Journal of Applied Energy* <http://dx.doi.org/10.1016/j.apenergy.2012.03.035> (April 2012)
31. **Shinneeb, A-M.** and Pollard, A. “Identification of Vortical Structures inside the Human Pharynx/Larynx Region from POD-Reconstructed Velocity Fields.” *Experiments in Fluids* doi: 10.1007/s00348-012-1293-5 (March 2012)
32. Pollard, A., Uddin, M., **Shinneeb, A-M.** and Ball, C. “Recent Advances and Key Challenges in Investigations of the Flow Inside Human Oro-Pharyngeal-Laryngeal Airway.” Invited article for Special Issue of Multi-disciplinary CFD in *International Journal of Computational Fluid Dynamics* C. Mavriplis (ed) doi:10.1080/10618562.2012.668616 (May 2012)
33. **Wei, L.**, and Pollard, A. “Direct numerical simulation of low Mach number turbulent wall bounded flow with favourable and adverse pressure gradients.” *Journal of Turbulence*, doi: 10.1080/14685248.2011.652305 (February 2012)
34. Ball, C.G., Fellouah, H. and Pollard, A. “The Flow Field of a Turbulent Round Jet.” *Progress in Aerospace Sciences* 50:1-26 (February 2012)
35. **Bespalko, D.**, Pollard, A. and Uddin, M. “Analysis of the pressure fluctuations from an LBM simulation of turbulent channel flow.” *Computers and Fluids* doi:10.1016/j.compfluid.2011.10.008 (October 2011)
36. **Wei, L.**, and Pollard, A. “Direct numerical simulation of compressible turbulent channel flows using discontinuous Galerkin method.” *Computers and Fluids* 47(1):85-100 (2011)
37. **Raiesi, H.**, Piomelli, U., Pollard, A. “Evaluation of turbulence models using direct numerical and large-eddy simulation data.” *ASME Journal of Fluids Engineering* Volume 133, Issue 2, 021203 (10 pages) doi:10.1115/1.4003425 (February 2011)

38. **Wei, L.** and Pollard, A. "Interactions among pressure, density, vorticity and their gradients in compressible turbulent channel flows." *Journal of Fluid Mechanics* doi:10.1017/S0022112010006166 (February 2011)
39. Rowe, R.K., **Hoor A.** and Pollard, A. "Examination of a Method for Reducing the Temperature of MSW Landfill Liners." *ASCE Journal of Environmental Engineering* 136(8): 794-803. doi:10.1061/(ASCE)EE.1943-7870.0000212 (2010)
40. **Fellouah, H.** and Pollard, A., "Velocity spectra and turbulence length scale distributions in the near to intermediate region of a round free turbulent jet." *Physics of Fluids* 21, 115101 doi:10.1063/1.3258837(2009)
41. **Bespalko, D.**, Pollard, A. and Uddin, M. "Direct numerical simulation of fully-developed turbulent channel flow using lattice Boltzmann method and analysis of OpenMP scalability." *High Performance Computing Systems and Application, Lecture Notes in Computer Science*, Volume LNCS 5976, 2010, pp 1-19
42. **Wei, L.** and Pollard, A. "Direct numerical simulation of a turbulent flow with pressure gradients, Progress in Turbulence III." *Proceedings of the iTi Conference in Turbulence* (2008), *Springer Proceedings in Physics* Vol.131, Peinke, Joachim; Oberlack, Martin; Talamelli, Alessandro (Eds.) (2010)
43. Artemov, V., Beale, S., de Vahl, G., Davis, Escudier, M., Fueyo, N., Launder, B.E., Leonardi, E., Lamil, M.R., Minkowycz, W., Patankar, S. V., Pollard, A., Runchal, A., Rodi, W. and Vanka, P. "A tribute to Spalding, D.B. and his contributions in science and engineering." *International Journal of Heat and Mass Transfer* 52(17-18):3884-3905, (2009)
44. **Fellouah, H., Ball, C.G.** and Pollard, A. "Reynolds number effects within the development region of a turbulent round free jet." *International Journal of Heat and Mass Transfer* 52(17-18):3943-3954 (2009)
45. **Fournier, G., Golanski, F.** and Pollard, A. "A novel outflow boundary condition for incompressible laminar wall- bounded flows." *Journal of Computational Physics* 227:7077-7082 (2008)
46. **Ball, C.G.**, Uddin, M. and Pollard, A. "High resolution turbulence modelling of airflow in an idealised human extra-thoracic airway." *Computers & Fluids* 37(8):943-964 (2008)
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304. **Iwaniw, M.** and Pollard, A. Multiple Jet Mixing in a Rectangular Duct: Centre-Plane Behaviour, Paper 83/FE/35, ASME Fluids Engineering Conference, Houston, Texas, June 20-22, 1983.

305. Pollard, A. and **Siu, A. L-W.** Laminar Flow Calculations Using a Modified Second Order Discretisation Scheme, Proceedings International Symposium on Refined Modelling of Flows, pg. 89-100, Paris, France, September 1982.
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310. Pollard, A. and Spalding, D.B. Turbulent Flow and Heat Transfer in a Tee-Junction, ASME Paper 79-WA/HT-47 1979

Letters to the Editor

Pollard, A., "A Comment on a Comparison of Hybrid and Quadratic Upstream Differencing in High Reynolds Number Elliptic Flows", Comp. Methods Applied Mech. Eng. 35, 1982

Other

Pollard, A., "HPC-You ain't seen 'nothing yet", Invited Contribution, Advanced Manufacturing, August 1999. Various contributions to the Bulletin of the CFD Society of Canada, see www.cfdsc.ca

Pollard, A., "What do airplanes and sharks have in common?" IBM VISIONS, High Performance Computing magazine, No.1, 1995.

Pollard, A., "A Report on a Birthday Celebration for Prof. Spalding, D.B. ", Jn. Heat Transfer Engineering, 5, No. 1-2, pp. 14-16,1984.

Invited Lectures/Seminars (non-conference)

Regularly invited to provide talks to industry and academe that are too numerous to mention. Recent ones include:

Pollard, A., Flow in the Human Oro-pharynx: A Kaleidoscope of Flow Physics RMIT University, Melbourne, May, 2011

Pollard, A., Biomass for the Great Lakes Regions, University of Auckland, June 2009

Pollard, A., Round jets and the effects of Reynolds number and boundary conditions:

- La Sapienza, University of Roma, October 17, 2008.
- National University of Singapore, January 16, 2009.
- University of Auckland, June, 2009

Pollard, A., Sustainable Bioeconomy for the Great Lakes, Rotary Club 12/03/08 and Q'PID Forum 18/03/08.

Pollard, A., HPC in Canada, Invited Talk to the South Africa National Centre for High Performance Computing (NCHPC), Cape Town, October 28-29, 2004.

Guest, M. and Pollard, A., Top Thirty Suggestions for the NCHPC, Cape Town, South Africa, October 28-29, 2004.

Pollard, A. and Uddin, M. "Self-similarity and initial conditions in co-flowing round jets," Symposium on Fluid Mechanics in the Spirit of A.E. Perry, Kingston, May 2004

Pollard, A. "Flow in the human airway: a combination of canonical flows," Symposium on Fluid Mechanics in the Spirit of A.E. Perry, Kingston, May 2004

Pollard, A., Uddin, M. and Braly, J., "Large eddy simulation of co-flowing and wall jets," University of Newcastle, Australia, March 2004

Pollard, A., Uddin, M. "Computational and experimental study of flow in the human extra-thoracic airway," University of Auckland, March, 2004.

Pollard, A., Uddin, M. "Turbulence, Structure and Why an Elephant Can Be Something Else," HPCVL Symposium, Kingston, October 2003

Pollard, A. "LES of turbulence and the emerging option of distributed computing," Seminar to NRC, Ottawa, February, 2001.

Pollard, A. "Coherent structures in co-flowing streams," seminar, University of Alberta, Edmonton, February, 2001

Pollard, A. "Computational Fluid Dynamics and Grid Computing, Invited Presentation," Alexander von Humboldt Stiftung special session for Canada, Ottawa, May 2001

Pollard, A. "Airplane Design Feature is 15 Million Years Old," Canadian Aeronautical and Space Institute, Kingston Branch, November 2001

Book Reviews

Turbulence modelling and vortex dynamics, Proceedings of Workshop, Istanbul, European Jn. Mechanics/B, 17(5):781-784, (1998) (with J.F. Morrison)

Fluid Vortices by S.I. Green, Kluwer Academic Publ. Volume 30 in series Fluid Mechanics and its Applications, Bulletin of the CFD Society of Canada, Volume 7, 1996 (see www.cfdsc.ca).

OTHER PROFESSIONAL ACTIVITIES

Professional Consulting

Consulted for Gas de France, British Aerospace, Goodfellow Consulting Engineers, Fuel Cell Technologies, Air Liquide, Petromont-Usine Petrochimique, Placer-Dome Canada Ltd., Rogers Data Services/URBACON, Dupont Canada, National Research Council of Canada, Salmon River Project

Technology Transfer

1996 CAGCT – was principal in formulating computer software to model the flow and heat transfer inside walking beam and pusher re-heat furnaces. These codes were delivered to Dofasco, Stelco and Algoma Steel companies.

1995-1996 Riblet code – my laboratory developed a computer code to study the near wall flow over riblets that can have a variety of shapes. This code is now used by British Aerospace.

1981 GRAFFIC – Graphical Analysis of Fluid Flow by Interactive Computation. A computer software package that I contributed to and was sold to CHAM Ltd., London U.K.

Expert Witness

Expert witness for trial: Province of Ontario vs Placer Dome (Tory, Tory, Deslauriers and Binnington, Toronto)

Reviews

Continuing reviewer and proposal evaluator for:

- American Institute of Aeronautics and Astronautics
- Applied Mathematical Modelling
- ASME Journal of Fluids Engineering
- ASME Journal of Heat Transfer
- Canada Foundation for Innovation
- Chemical Engineering Communications
- Computers and Chemical Engineering
- Experiments in Fluids
- International Journal CFD
- International Journal Heat and Fluid Flow
- International Journal Heat Mass Transfer
- Institute of Physics journals
- Journal Computers and Fluids
- Journal of Fluid Mechanics
- Journal of Numerical Heat Transfer

- National Research Council of Canada, High Performance Computing competition
- Natural Science and Engineering Research Council of Canada (various capacities)
- Physics of Fluids
- Premier's Research Excellence Award Program (Ontario)
- Provincial and National Centres of Excellence
- National Science Foundations of the USA, Israel and Italy

Reviewer for papers submitted to both national and international conferences (too numerous to mention)