

BIOGRAPHICAL SKETCH

NAME: Ralph William Metcalfe, Ph D. **TITLE:** Professor, Mechanical Engineering and Mathematics

PROFESSIONAL PREPARATION

University of Washington	Mathematics	BS	1968
M. I. T.	Mathematics	MS	1970
M. I. T.	Applied Mathematics	Ph.D.	1973

APPOINTMENTS

1999 - Present Professor, Mechanical Engineering & Mathematics, University of Houston
1987 - 1998 Professor, Mechanical Engineering, University of Houston
1978 - 1987 Senior Research Scientist, Flow Research Company
1973 - 1978 Research Scientist, Flow Research Company

PUBLICATIONS

INVITED PAPERS

METCALFE, RALPH W. 2003 Computational Fluid Dynamics – A Tool for Assessing Aneurysm Risk? **Proceedings of the Neuroradiology Education and Research Symposium at the 41st Annual Meeting of the American Society of Neuroradiology**, Washington D.C. April 26 – May 2. 10 pp.

METCALFE, RALPH W. 2003 The Promise of Computational Fluid Dynamics as a Tool for Delineating Therapeutic Options in the Treatment of Cerebrovascular Aneurysms, *American Journal of Neuroradiology* **24 (4)**: 553-554. (Invited Commentary)

METCALFE, RALPH W. 1999 Drag Reduction for Flow Past a Cylinder Using Active Control, at: **Differential Equations and Their Applications: International Symposium dedicated to J. L. Lions**, University of Houston, October 7-9.

METCALFE, RALPH W. 1999 Multi-Phase Flows: Paradoxes and Computational Challenges: **30th AIAA Fluid Dynamics Conference**, Norfolk, VA. 28 June - 1 July. Paper No. AIAA 99-3692.

METCALFE, RALPH W., ANDERS NORDLANDER, JIWEN HE, ROLAND GLOWINSKI,. 1998 Drag Reduction for Flow Past a Cylinder Using Active Control, **XXXI National Congress of the Mexican Mathematical Society**, Hermosillo, Mexico. October 11 -17.

TORNBERG, ANNA-KARIN, **RALPH W. METCALFE**, L. RIDGWAY SCOTT, BABAK BAGHERI, 1997 A Fluid Particle Motion Simulation Method, in **Computational Science for the 21st Century**, ed. J. Periaux et al. Wiley-Interscience-Europe, Strasbourg, France.

METCALFE, R. W. 1996 Boundary Layer Flow Control. **ECCOMAS 96**, Paris, France. September 9 -13.

REFEREED PUBLICATIONS

METCALFE, RALPH W. 2003 The Promise of Computational Fluid Dynamics as a Tool for Delineating Therapeutic Options in the Treatment of Cerebrovascular Aneurysms, *American Journal of Neuroradiology* **24 (4)**: 553-554. (Invited Commentary)

YAMROM, B., I. KUNIN, **R. METCALFE** & G. CHERNYKH 2003 Discrete Systems of Controlled Pendulum Type. *Int. J. Eng. Sci.* **41 (3-5)**: 449-458.

HE, J. W., R. GLOWINSKI, **R. METCALFE**, J. PERIAUX, 2002 Active control for incompressible viscous fluid flow: application to drag reduction for flow past circular cylinders, in *Computational Methods for Control Applications*, R. Glowinski, H. Kawarada, J. Periaux eds., Gakkotosho Co., Tokyo, pp. 233-292.

- LUNDIN, STAFFAN, **RALPH W. METCALFE**, CRAIG J. HARTLEY, 2002 Effects of Severity and Eccentricity of Carotid Stenosis on Pulsatile Blood Flow, *Proceedings of the 24th Annual International Conference of the Engineering in Medicine & Biology Society and the Annual Fall Meeting of the Biomedical Engineering Society(EMBS-BMES)*, Houston, TX 23-25 October 2002, paper no. 6.1.7-6
- HE, J. W., M.CHEVALIER, R. GLOWINSKI, **R. METCALFE**, A. NORDLANDER, J. PERIAUX, 2000 Drag Reduction by Active Control for Flow Past Cylinders, in *Computational Mathematics Driven by Industry*, V. Capasso, H. Engl, J. Periaux eds., Lecture Notes in Mathematics, Vol. **1739**, Springer-Verlag, Berlin, 2000, pp. 287-363.
- JUAREZ, HECTOR, RIDGWAY SCOTT, **RALPH METCALFE**, BABAK BAGHERI, 2000 Direct Simulation of Freely Rotating Cylinders in Viscous Flows by High Order Finite Element Methods, *Computers & Fluids* **29 (5)** .pp. 547-582.
- HE, J. W., R. GLOWINSKI, **R. METCALFE**, A. NORDLANDER & J. PERIAUX 2000 Active Control and Drag Optimization for Flow past a Circular Cylinder, I. Oscillatory Cylinder Rotation. *J. Comp Phys*, **163**, pp. 83-117.
- HE, J. W., R. GLOWINSKI, **R. METCALFE**, & J. PERIAUX 1998 A Numerical Approach to the Control and Stabilization of Advection-Diffusion Systems: Application to Viscous Drag Reduction, *IJCFD*, Vol. 11, pp. 131 - 156...
- SU, CHAOGUANG & **RALPH METCALFE**, 1997 Influences of Liquid Properties on Gas Entrainment at the Bottom of a Fixed Bubble, *Proc. 1997 ASME Fluids Engineering Division Summer Meeting*, June 22 -26, Vancouver, B. C. on CD-Rom, Paper # FEDSM97-3537.
- ILIN, ANDREW V., BABAK BAGHERI, **RALPH W. METCALFE**, & L. RIDGWAY SCOTT, 1997 Error Control and Mesh Optimization for High-Order Finite Element Approximation of Incompressible Viscous Flow, *Computational Methods in Applied Mechanics and Engineering*. Vol **150**, pp. 313-325.

CONFERENCE PROCEEDINGS

- LUNDIN, STAFFAN, **RALPH W. METCALFE**, CRAIG J. HARTLEY, 2002 Effects of Severity and Eccentricity of Carotid Stenosis on Pulsatile Blood Flow, *Proceedings of the 24th Annual International Conference of the Engineering in Medicine & Biology Society and the Annual Fall Meeting of & the Biomedical Engineering Society(EMBS-BMES)*, Houston, TX 23-25 October 2002, paper no. 6.1.7-6
- METCALFE, RALPH W.** 2003 Computational Fluid Dynamics – A Tool for Assessing Aneurysm Risk? **Proceedings of the Neuroradiology Education and Research Symposium at the 41st Annual Meeting of the American Society of Neuroradiology**, Washington D.C. April 26 – May 2. 10 pp.
- DELGADO, R. M., B. KAR, T.J. MYERS, G. LETSOU, I. RIAZ, **R. METCALFE**, M.T. HARTING, O.H. FRAZIER. 2003 Vascular Thrombosis in Patients with Long Term Jarvik 2000 VAD Support, **Proceedings of the 23rd Annual Meeting of the International Society for Heart & Lung Transplantation**, Vienna, Austria. April 9 – 12, (Abstract). Submitted for publication.
- METCALFE, RALPH**, MATTHEW HARTING, REYNOLDS DELGADO, O. HOWARD FRAZIER, 2002 Effects of non-pulsatile flow on thrombogenesis., *Proceedings 55th Annual Meeting, Division of Fluid Dynamics, American Physical Society*, Southern Methodist University, Dallas, TX. 24-26 Nov. (Abstract).

SERVICE:

Intellectual Property Committee, U H, 1992 - Present

Chair: Intellectual Property Committee, U H, 1994 - 1998.

Undergraduate Honors Advisor, Dept. of Mech. Eng., Fall 1989 - Present

Faculty Advisor, Pi Tau Sigma, M. E. Honor Society, 1994 - Present.

Faculty Advisor, AIAA Student Section, University of Houston, 1999 - 2003.

Associate Technical Editor, ASME Journal of Fluids Engineering, 1993 - 1996

College of Engineering, Promotion and Tenure Committee, 1995 - 1997.

Chair, College of Engineering, Promotion and Tenure Committee, 1997.