

BRIEF RESUME

M. Volkan Otugen, Ph.D.

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EDUCATION

Ph.D. Mechanical Engineering and Mechanics, Drexel University, May 1986
M.S. Mechanical Engineering and Mechanics, Drexel University, May 1982
B.S. Naval Architecture and Marine Eng., Istanbul Technical University, 1979

POSITIONS HELD

2012- present Senior Associate Dean, Lyle School of Engineering, Southern Methodist Univ.
2011- present George Brown Endowed Professor & Chair, Mechanical Engineering Dept., Southern Methodist Univ.
2007- 2010 Professor and Chair, Mechanical Engineering Dept., Southern Methodist Univ.
2006- 2007 Senior Faculty Fellow, Othmer Institute for Interdisciplinary Studies, Polytechnic U.
2002- 2007 Professor of Mechanical and Aerospace Engineering, Polytechnic University
1999 University Resident Researcher, Propulsion Dir., Air Force Research Lab, WPAFB
1998 Fulbright Scholar/Lecturer, Istanbul Technical University, Mechanical Engineering
1998 Summer Faculty Fellow, NASA Lewis Research Center
1995-1998 Aerospace Engineering Program Director, Polytechnic Univ.
1995-2001 Associate Professor of Mechanical & Aerospace Engineering
1988-1994 Assistant Professor of Aerospace Engineering, Polytechnic University
1990-1991 Summer Faculty Fellow, NASA Lewis Research Center
1986-1988 Research Analyst, Arizona State University
1983-1986 Research Assistant, Drexel University
1980-1983 Teaching Assistant, Drexel University

RESEARCH AREAS:

- Experimental and theoretical fluid mechanics and heat transfer
- Turbulent shear flows, high-speed aerodynamics, non-Newtonian flows
- Plasma applications to aerodynamics, wave propagation through weakly ionized plasma
- Development of micro-optical sensor technology; distributed optical sensors; nano-sensing
- Development of novel optical measurement techniques based molecular and particle scattering
- Interferometric Rayleigh scattering, dual-line detection Rayleigh scattering (DLDR)

TEACHING AREAS:

- Undergraduate courses in basic fluid mechanics, heat transfer, thermodynamics, aerodynamics, compressible flow, viscous flow, dynamics, structural systems, rocket propulsion, aircraft design and numerical methods.
- Graduate courses in convective heat transfer, transport phenomena, boundary layer theory, turbulence and experimental methods.

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HONORS AND AWARDS:

- Fellow of American Society of Mechanical Engineers
- Associate Fellow of American Institute of Aeronautics and Astronautics
- Fulbright Fellow (1998 - 1999)
- Senior Fellow, Othmer Institute for Interdisciplinary Studies, Polytechnic Univ. (2005-2008)
- SAE Ralph Teetor Award for Excellence in Education (1993)
- Case-NASA Cooperative Research & Development Fellow (Summer, 1990 and 1991)
- Cited in Who's Who in the East
- Member of the New York Academy of Sciences (1998-2005)

JOURNAL EDITORSHIP:

Associate Editor, ASME Journal of Fluids Engineering, October 2001 – December 2004

BOOK CHAPTERS & PROCEEDING EDITORSHIP:

- T. T. Huang and **M. V. Otugen**, "Laser Anemometry: Advances and Applications". Published by the American Society of Mechanical Engineers, NY, NY. July, 1994.
- **M.V. Otugen**, M. Kiya, C. Dutton, B. Reichert and C. Vradis. "Separated and Complex Flows - II". Published by the Society of Mechanical Engineers, NY, NY, August, 1995
- T.T. Huang, J. Turner, M. Kawahashi and **M.V. Otugen** "Laser Anemometry". Published by the Society of Mechanical Engineers, FED-Vol.229, NY, August, 1995
- B. Khaligi, D.H. Fruman, W.J. Yang, M.J. Braun, **M.V. Otugen**, C.J. Freitas and F. Baban "Experimental and Numerical Flow Visualization". FED-Vol.239. Published by the American Society of Mechanical Engineers, NY, NY, July 1996
- **M.V. Otugen**, C. Dutton, G.Vradis. "Separated and Complex Flows – III". Published by American Society of Mechanical Engineers, NY, NY, July 1997
- **M.V. Otugen**, G.Vradis "Separated and Complex Flows - IV", Published by American Society of Mechanical Engineers, NY, NY, July 1999.
- G. Vradis B. Thompson and **M.V. Otugen** "Separated and Complex Flows – V". Published by American Society of Mechanical Engineers, NY, NY, July 2001
- **M. Volkan Otugen** "Spectroscopic and Scattering Techniques, in *Encyclopedia of Aerospace Engineering*, R. Blockley and W. Shyy (eds). John Wiley & Sons Ltd, Chichester, UK, pp. 789-798, 2010

PATENTS:

- "Method for remote detection of volatile taggant", US patent no 6025200, issued: February 2000 (Inventors: N. Kaish, J. Fraiser, M. V. Otugen, S. Popovic).
- "Micro-optical wall shear stress sensor", US patent no. 7701586, issued: April, 2010 (Inventors:

M. V. Otugen and V. Sheverev)

- “Micro-optical sensor for electric field detection”, US Patent application 20110277540. Patent approved on December 23, 2013 (Inventors: T. Ioppolo, M.V. Otugen and U. Ayaz).
- “Whispering-gallery-mode-based seismometer “US patent application 20120056072. Patent approved on January 17, 2014. (Inventors: D.C. Fourquette, M.V, Otugen, L. Larocque, G.A. Ritter, J.J. Meesen and T. Ioppolo)

RESEARCH FUNDING:

Over \$ 9 million of external funding received from federal agencies (NSF NASA, DoD, DoE, DARPA) and other sources (Gas Research Institute, LILCO, Exxon, Northrop-Grumman)

RECENT PUBLICATIONS:

- Amir R. Ali, M. V. Otugen and Tindaro Ioppolo “High-speed transient sensing using dielectric micro-resonators”, *Applied Optics*, 2015, Vol. 54, Issue 23, pp. 7076-7081.
- A. R. Ali, T. Ioppolo, **M.V. Otugen**, M. Christensen and D. MacFarlane "Photonic Electric Field Sensor Based on Polymeric Micro-spheres", *Journal of Polymer Science, Part B; Polymer Phys.*, 2014, Vol. 52, pp. 276-279 DOI: 10.1002/polb.23429.
- U. K. Ayaz, T. Ioppolo and **M.V. Otugen**, “Direct measurement of wall shear stress in a separating and reattaching flow with a photonic sensor”, *Meas. Sci. Technol.*, 2013, Vol. 24 124001 (9 pp)
- T. Ioppolo, **M.V. Otugen** and U. Ayaz, “Development of Whispering Gallery Mode Polymeric Micro-optical Electric Field Sensors, *J. Vis. Exp.*, 2013 (71), e50199, doi:10.3791/50199
- M. Manzo, T.Ioppolo, U.K. Ayaz, V. LaPenna and **M.V. Otugen**, “A Photonic Wall Pressure Sensor for Fluid Mechanics Applications”, *Rev. Sci. Instrum*, 2012, Vol. 83, 105003, doi: 10.1063/1.4757569
- T. Ioppolo, J. Stubblefield and **M.V. Otugen**, “Electric Field-Induced Deformation of Polydimethylsiloxane Polymers”, 2012, *J. Appl. Phys.*, 2012, Vol. 112, 053301. 044906; doi: 10.1063/1.4747832
- T. Ioppolo, **M.V. Otugen**, D. Fourquette and L. Larocque, “Effect of Acceleration on the Morphology Dependent Optical Resonances of Spherical Resonators”, 2011, *J. Opt. Soc. Am. B.* Vol 28, No 1, January 2011
- U. Ayaz, T. Ioppolo and **M.V.Otugen**, “Wall Shear Stress Sensor Based on the Optical Resonances of Dielectric Microspheres”, 2011, *Meas. Sci. Technol.* Vol 20, doi: 10:1088 /09570233/22/7/075203, May 2011, 053301