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Michael Papageorge, Ph.D.

Dr. Michael Papageorge is a Senior Engineer at Colwell Consulting specializing in mechanical engineering and the analysis of complex fluid, thermal, and combustion processes. Dr. Papageorge applies his expertise to the investigation of the origin and cause of fires and explosions as well as the failure mechanisms within mechanical and electrical systems. His research focuses on the examination of fundamental and applied issues involving fluid dynamics, combustion, thermodynamic processes, and heat transfer including auto-ignition of fuels and transport properties of jet flames. Furthermore, Dr. Papageorge has extensive experience with experimental design and implementation, flow visualization, pressure and temperature instrumentation, and statistical analysis.

Dr. Papageorge has investigated fires and explosions in a wide array of environments including residential and commercial structures, industrial complexes associated with chemical and petroleum industries, and wild land fires. His investigations have included a broad range of products including motor vehicles (passenger, commercial, rail, and marine), lawn mowers, home appliances, and construction equipment. These investigations addressed technical issues such as burn pattern interpretation, evaluation of ignition mechanisms, fire spread, smoke transport, health factors (smoke inhalation and carbon monoxide poisoning), and fuel loading.

Prior to joining Colwell Consulting, Dr. Papageorge worked as a graduate research assistant in the Turbulence and Combustion Research Laboratory at Ohio State University, and as an undergraduate research assistant in the Gas Dynamics Laboratory at Princeton University.

Education

Ph.D., Mechanical Engineering, Ohio State University
M.S., Mechanical Engineering, Ohio State University
B.S.E., Mechanical Engineering and Aerospace Engineering, Princeton University

Certifications

Fire Cause and Origin Investigation 1A accredited by the California State Fire Marshal

Professional Honors

OSU Graduate School Presidential Fellowship (2015)
Morgan W. McKinzie '93 Senior Thesis Fund Award (Princeton - 2009)

Publications

Papageorge, M. and Colwell, J. (2018) High-Performance Rear- and Mid-Engine Vehicle Exhaust System Temperatures. SAE Paper 2018-01-1436.

Papageorge, M. and Sutton, J.A. (2017) Intrusive effects of repetitive laser pulsing in high-speed tracer-LIF measurements. *Exp. In Fluids*, 58:40.

Papageorge, M. (2017) A study of scalar mixing in gas phase turbulent jets using high repetition rate imaging. Ph. D. Dissertation, Ohio State University.

Papageorge, M. and Sutton, J.A. (2016) Statistical processing and convergence of finite-record-length time-series measurements from turbulent flows. *Exp. in Fluids*, 57:126.

Arndt, C.M., Papageorge, M., Fuest F., Sutton, J.A., Meier, W., Aigner, M., (2016) The role of temperature, mixture fraction, and scalar dissipation rate on transient methane injection and auto-ignition in a jet in hot coflow burner. *Combust. Flame*, 167:60-71.

McManus, T., Papageorge, M., Fuest, F., Sutton, J. (2015) Spatio-temporal characteristics of temperature in turbulent non-premixed jet flames. *Proc. Combust. Inst.*, (2015), 35:1191-1198.

Papageorge, M., McManus, T., Fuest, F., Sutton, J. (2014) Recent advances in high-speed planar Rayleigh scattering in turbulent jets and flames: increased record lengths, acquisition rates, and image quality. *Appl. Phys. B*, (2014) 115:198-213.

Papageorge, M., Arndt, C., Fuest, F., Meier, W., Sutton, J. (2014) High-speed mixture fraction and temperature imaging of pulsed, turbulent fuel jets auto-igniting in high-temperature, vitiated co-flows. *Exp. in Fluids*, 55:1763.

Fuest, F., Papageorge, M., Lempert, W.R., Sutton, J.A. (2012) Ultrahigh laser pulse energy and power generation at 10 kHz. *Opt Lett.*, 37:3231-3233.

Invited Presentations

Papageorge, M. (2015) Recent advances in laser diagnostics applied to reacting and non-reacting turbulent flows. Presented at Clean Combustion Group, University of Sydney, Sydney, NSW, Australia.

Presentations and Published Abstracts

Papageorge, M. and Sutton, J. (2015) Space-time correlations in a turbulent gas-phase jet. 68th APS Div. of Fluid Dynamics Meeting, Boston, MA, Nov., 2015.

Papageorge, M. and Sutton, J. (2015) Simultaneous high-resolution kHz-rate 2-D conserved scalar and 3-component velocity field measurements in gas-phase turbulent jets. 53rd AIAA Aerospace Sciences Meeting, Kissimmee, FL, Jan., 2015.



Papageorge, M. and Sutton, J. (2014) Simultaneous high-resolution kHz-Rate 2-D conserved scalar and 3-component velocity field measurements in gas-phase turbulent jets. 17th Lisbon Symposium on Laser Diagnostics, Lisbon, Portugal, July, 2014.

Papageorge, M., Fuest, F., Sutton, J. (2014) Dynamics of conserved scalar mixing and transport in gas-phase turbulent jets. 52nd AIAA Aerospace Sciences Meeting, National Harbor, MD. Jan., 2014.

McManus, T., Papageorge, M., Fuest, F., Sutton, J. (2014) Turbulent non-premixed jet flames using high-speed planar Rayleigh scattering. 52nd AIAA Aerospace Sciences Meeting, National Harbor, MD. Jan., 2014.

Papageorge, M., Fuest F., Sutton, J. (2013) Statistical and visual analysis of conserved scalar mixing dynamics in turbulent jets using kHz-rate imaging. 66th APS Div. of Fluid Dynamics Meeting, Pittsburgh, PA, Nov., 2013.

Papageorge, M., Fuest, F., Sutton, J. (2013) Spatio-temporal characteristics of scalar mixing in turbulent gas-phase jets. 51st AIAA Aerospace Sciences Meeting, Grapevine, TX, Jan., 2013.

Fuest, F., Papageorge, M., Lempert, W., Sutton, J. (2013) Development of a high-energy pulse burst laser system for high-speed fluid dynamics and combustion measurements. 51st AIAA Aerospace Sciences Meeting, Grapevine, TX, Jan., 2013.

Papageorge, M. and Sutton, J. (2012) Time-resolved, two-dimensional imaging of scalar mixing in turbulent gas-phase jets. 65th APS Div. of Fluid Dynamics Meeting, San Diego, CA, Nov., 2012.

Papageorge, M., Lempert, W., Sutton, J. (2012) Development of a next-generation pulse burst laser system for time-resolved fluid dynamics and combustion measurements. 50th AIAA Aerospace Sciences Meeting, Nashville, TN, Jan., 2012.

Sahoo, D., Papageorge, M., Smits, A. (2010) PIV Experiments on a rough wall hypersonic turbulent boundary layer. 40th AIAA Fluid Dynamics Conference, Chicago, IL, Jun. 2010.

Sahoo, D., Papageorge, M., Smits, A. (2008) PIV measurements of turbulence in a hypersonic boundary layer. 61st APS Div. of Fluid Mechanics Meeting, San Antonio, TX, Nov., 2008.

