

Robert Santoro
Department of Mechanical and Nuclear Engineering, Penn State
240 Research Building East, University Park, PA 16802
Phone: (814) 863-1285 Fax: (814) -1714 e-mail: rjs@psu.edu



Brief Biography

Dr. Robert J. Santoro received a Doctorate in physics from Boston College in 1975 where he also held a one-year position as a Lecturer. Subsequently, he held research positions at the Fuels Research Laboratory in the Department of Mechanical and Aerospace Engineering at Princeton University and National Bureau of Standards (NBS) in Washington, D.C. At NBS, Dr. Santoro developed research efforts in the areas of particle formation in flames, laser tomography, and spray combustion research. In 1985 he was awarded the U.S. Department of Commerce Silver Medal for his research in soot particle formation. In 1986 he joined the Pennsylvania State University as an Associate Professor of Mechanical Engineering and was promoted to Full Professor in 1990. Presently, Dr. Santoro is the George L. Guillet Professor of Mechanical Engineering and the Director of the Propulsion Engineering Research Center at The Pennsylvania State University.

Relevant Experience and Interests

Dr. Santoro's research interests include the study of soot formation in flames, gas turbine combustion, liquid spray combustion, chemical kinetics, laser diagnostics, Diesel engine combustion, combustion instability and rocket propulsion. Recently, much of his research has focused on measurements in high-pressure experiments related to gas turbine and rocket combustors. His research also typically involves the application and development of laser diagnostic techniques such as laser-induced incandescence and tomography to a wide variety of combustion problems.

Five Publications Relevant to the Present Subject Area

1. A. V. Menon, S.-Young Lee, M. J. Linevsky, T. A. Litzinger, and R.J. Santoro (2007). "Addition of NO₂ to a Laminar Premixed Ethylene-air Flame: Effect on Soot Formation," *Proc. Combust. Inst.* 31, 593-601.
2. J. Wu, K. H. Song, T. A. Litzinger, S.-Y. Lee, R. J. Santoro, M. Linevsky, M. Colket, and D. Liscinsky (2006). "Reduction of PAH and Soot in Premixed Ethylene-air Flames by Addition of Ethanol," *Comb. Flame* 144, 675-687.
3. J. Wu, K. H. Song, T. A. Litzinger, S.-Y. Lee, R. J. Santoro, and M. Linevsky (2006). "Reduction of PAH and Soot in Premixed Ethylene-air Flames by Addition of Dimethyl Ether," *Combust. Sci. Tech.* 178, 837-863.
4. S.-Y. Lee, S. Seo, J.C. Broda, S. Pal, and R. J. Santoro (2000). "An Experimental Estimation of Mean Reaction Rate and Flame Structure During Combustion Instability in a Lean Premixed Gas Turbine Combustor," *Proc. Combust. Inst.* 28, 775-782.
5. R.J. Santoro and C.R. Shaddix (2002). "Laser-Induced Incandescence," *Applied Combustion Diagnostics*, Kohse-Höinghaus and Jeffries (Eds.), Taylor & Frances, New York, Chap. 9, 252-286.

Other Selected Publications

1. S.R. Saretto, S.-Y. Lee, J. Brumberg, C. Conrad, S. Pal, and R. J. Santoro (2005). "Studies of Detonation Transition in a Gradual Area Expansion for Multi-Cycle PDE Applications," *Proc. Combust. Inst.* 30, 2809-2816.
2. S.-Y. Lee, J. Watts, S. Saretto, S. Pal, C. Conrad, R. Woodward, and R.J. Santoro (2004). "A Study of Deflagration to Detonation Transition Process by Turbulence-Generating Obstacles in Pulsed Detonation Engines," *J. Prop. Power* 20, 1026-1036.
3. C. Mordaunt, C. Brossard, S.-Y. Lee, and R.J. Santoro (2001). "Combustion Instability Studies in a High-Pressure Lean-Premixed Model Combustor under Liquid Fuel Operation," *Proc. of JPGC'01*, 2001 International Joint Power Generation Conference, New Orleans, LA.