



Subbaiah V. Malladi, Ph.D., P.E.

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Professional Profile

Dr. Malladi obtained his Ph.D. from California Institute of Technology, specializing in the fields of Fluid Mechanics and Heat Transfer. As a mechanical engineer and the firm's CTO, Dr. Malladi specializes in issues that have societal impact, including extensive experience in the transportation field. He has directed several practices within Exponent, including fluid mechanics, heat transfer, information technology, and environmental services. His experience covers a wide range of applications in engineering and science, including equipment used in transportation systems (such as the fuel, ignition, steering, cooling, braking, electrical and safety systems on vehicles), power plant equipment (such as steam turbines, boilers, furnaces and gas generators), home appliances (including water and air heaters, refrigeration units, and equipment used in washing, drying and cooking), medical equipment (such as catheters and cochlear implants), environmental concerns (such as pesticide sprays, ground water contamination, and atmospheric dispersion), and risk analysis.

He has led several experimental and analytical studies that address multi-phase flows, including analyses of fine sprays. His expertise extends to analyses of large-scale warranty and accident data in the course of his assessment of the real world performance of numerous motor vehicle platforms. Dr. Malladi often directs substantial experimental investigations, including full-scale multi-vehicle automobile crashes, accident reconstructions, product analysis and failure mode evaluations, and burn testing. Because of his education and training in the fields of fluid mechanics and combustion, he also supervises large-scale investigations pertaining to fire cause and origin, automotive fuel system assessment, heat transfer and combustion, and studies involving specialized instrumentation.

Dr. Malladi has held a variety of research positions including a fellowship at the California Institute of Technology and a Project Leader position with the National Aeronautical Laboratory in India. He also served as a Senior Research Assistant at the Indian Institute of Technology.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, California Institute of Technology (Caltech),

M.Tech., Mechanical Engineering, Indian Institute of Technology, Madras, India,

B.E., Mechanical Engineering, Sri Venkateswara University, India,

B.Sc., Physics, Chemistry, Mathematics, Osmania University, India,

First Rank in the University in all the B.E. examinations

University Merit Scholarship from Osmania University

Government of India Scholarship

Dr. Anant H. Pandya Memorial Scholarship

Sir Dorabji Tata Trust Scholarship

Licenses and Certifications

Licensed Professional Mechanical Engineer, California, #M23272

Licensed Professional Mechanical Engineer, New York, #085137

Professional Affiliations

American Institute of Aeronautics and Astronautics (member)

American Association for the Advancement of Science (member)

Combustion Institute (member)

National Fire Protection Association (member)

Society of Automotive Engineers (member)

Publications

"Non-Steady Flame Spreading in Two-Dimensional Ducts," American Institute of Aeronautics and Astronautics Journal, Vol. 21, No. 11, November 1983.

"BASIC Formatted Printing," BYTE, Vol. 7, No. 3, March 1982.

"Representation of the Drag Polar of a Fighter Aircraft," Journal of Aircraft, Vol. 13, No. 2, February 1976 (with K.S. Yajnik).

"Experiments on Swirling Turbulent Flows. Part I - Similarity in Swirling Flows," Journal of Fluid Mechanics, Vol. 60, No. 4, May 1973 (with K.S. Yajnik).

Presentations

"Unsteady Flow Effects in Combustion Systems," Combustion Fundamentals Research Conference, NASA Lewis Research Center, Cleveland, OH, October 21-22, 1982.

"Non-Steady Behavior of Flame Spreading in a Two-Dimensional Duct," Paper #81-1348, presented at the American Institute of Aeronautics and Astronautics/Society of Automotive Engineers/American Society of Mechanical Engineers Joint Propulsion Conference, Colorado Springs, CO, July 27-29, 1981.

"Analysis of Low-Frequency Disturbances in Afterburners," Proceedings, Specialists Meeting on Combustion Modeling, Advisory Group for Aerospace Research & Development Propulsion and Energetics Panel, Neuilly Sur Seine, France, October 1979 (with F.E. Marble and S. Candel).

"An Experimental Study of the Effect of Swirl on Skin Friction," Symposium on Gas Turbine Technology, GTRE, Bangalore, India, April 1973 (with K.S. Yajnik).

"An Experimental Investigation of Turbulent Pipe Flow with Swirl," 3rd Conference on Fluid Mechanics and Fluid Power, Indian Institute of Technology, Kharagpur, India, 1971 (with K.S. Yajnik).

Reports

"Engineering Investigation of Electrical Fires in Certain Ford Vehicles," Failure Analysis Associates Report, October 1996

"Investigation of the Casualty to the SS Puerto Rican, October 31, 1984," Failure Analysis Associates Report, March 1985 (with J.N. Robinson, R.K. Taylor, and R.P. Huet).

"A Progress Report on the Three-Dimensional Transient Thermal Analysis of Das Island Liquefied Natural Gas Tank DIOI," Failure Analysis Associates Report, May 1984 (with G.F. Fowler and G. Derbalian).

"Investigation of the Cause of a Fire in a Liquid Hydrogen Trailer," Failure Analysis Associates, September 1983 (with R.K. Taylor).

"A Preliminary Investigation of Low Pressure Steam Turbine Rotor Cavity Fluid Dynamics," Failure Analysis Report, January 1983 (with G.F. Fowler and R.A. Kadlec).

"Chemical Reactions in Turbulent Mixing: The Turbulent Chemical Reaction of a Hydrogen Jet Discharged into Fluorine," Final Technical Report, Air Force Office of Scientific Research Contract #F44620-76-C-0046, Graduate Aeronautical Laboratories, California Institute of Technology, April 1979 (with F.E. Marble et al.).

"A Null-Reading Projection Micro-Manometer for Boundary Layer Measurements," National Aeronautical Laboratory Report NAL BL-3, Bangalore, India, December 1975.

"Tests on Screen Configurations in the Wide-Angled Diffusers of a Blower Tunnel," National Aeronautical Laboratory Report NAL BL-2, Bangalore, India, December 1975.