



Physical Research Laboratory, Ahmedabad

COLLOQUIUM - 14 - 15

- Speaker:** Prof. K. P. J. Reddy
Senior Professor, Department of Aerospace Engineering, Indian Institute of Science, Bangalore.
- Title:** "Shock Waves Research in IISc: Taking them to Commercial Arena"
- Time:** Wednesday, 12 November, 2014, 16.00 hrs.
- Venue:** Seminar Hall, Above NANOSIMS Laboratory, PRL.

Abstract

Shock Waves are like lasers in their nascent stage, waiting for applications. Until the middle of the twentieth century the field of Shock Waves was mostly confined to gas dynamics, high-speed aerodynamics, and military technology and it quickly developed into a large interdisciplinary field by its own only few decades ago. With the progress in the understanding of fundamental theory, methods of producing shock waves in the laboratory, equation-of-state data, high-speed measurement techniques and visualization methods and computational fluid dynamic techniques, many basic science and engineering branches have emerged in recent times. The spirit of this interdisciplinary nature of shock waves is well captured in the ongoing research work in the Laboratory for Hypersonic and Shock Wave Research (LHSR) in the Department of Aerospace Engineering, IISc. Main focus of the work in LHSR is on using shock waves produced in shock tubes to drive high speed wind tunnels called hypersonic shock tunnels. These tunnels are extensively used to study the planetary reentry aerodynamics and high temperature aerothermodynamics of vehicle configurations which are of interest to our space and defense programs. These studies are useful for the development of thermal protection systems for hypersonic vehicles and also for the enhancement of their performance. However shock waves are also being used for research in other fields including chemistry, material science, biology, veterinary science, medical and industrial applications. In addition, many new methods of producing shock waves for specific applications have also been invented in the laboratory. In this talk we will present a overview of the shock waves research work in LHSR and describe some of our recent inventions and commercial products.

The Speaker

Prof. K. P. J. Reddy received M.Sc. Degree from Mysore University (1975) and Ph.D. degree from Birla Institute of Technology, Mesra (1981). Presently he is Prof. Satish Dhawan ISRO Chair Professor in the Department of Aerospace Engineering, IISc and an Adjunct Professor of the Defence Institute of Advanced Technology, Pune. His areas of interest are Hypersonics, Shock Waves, Chemical Kinetics, Lasers, Photonics, Biophotonics and Nonlinear Optics. One of his recent inventions is named after him as Reddy Tube. Prof. Reddy is the founder President of Society for Shock Wave Research, India and also the President of International Shock Wave Institute, at Nagoya, Japan. He recently received Honour Diploma from Minsk International Forum on Heat and Mass Transfer, Minsk, Belarus and IISc Alumni Award for Excellence in Engineering Research in 2010. He has published more than 250 technical papers in international journals and conferences and has half a dozen Patents. He is a member of International Advisory Boards for many reputed International Conferences. He served as the Editor-in-Chief of International Journal of Hypersonics and a Member of the Editorial Boards for the Shock Waves journal, Journal of Indian Institute of Science and Journal of Engineering Physics and Thermo physics.

Tea at 15:30 hrs.

ALL ARE WELCOME

