One presentation on "Structural Optimisation in the Aircraft Industry" by Dr. A. R. Upadhya (AE/B.Tech/1972) is arranged at Seminar Room of the Department at 4.00 PM tomorrow. You are requested to attend the seminar and interact with him. The abstract of the presentation and profile are as follows:

**Abstract:** The basic principles of and approach to structural optimization is briefly described. The tools used in the aircraft industry with their attributes are listed. The airframe design process starting with the structural layout, material selection, CAD model, structural finite element model, loads model etc., leading to definition of maneuver loads and initial sizing is described. The process of optimization of CFC wing skins for minimum weight involving selection of critical load cases, definition of design variables and optimization constraints, the method used etc are discussed. Typical results including convergence history, evolution of optimum weight, constraint influence zones, optimum design and its conversion to a practical wing skin design are presented.

## Profile:

Dr. A. R. Upadhya holds B.Tech in Aeronautical Engineering from IIT, Kharagpur and Indian Institute of Science respectively, and a Ph D from Cranfield Institute of Technology, UK. He served as a Scientist at the CSIR and National Aerospace Laboratories initially during 1974-1986 and then at the Aeronautical Development Agency, Ministry of Defence(MoD) during 1986-2004 on the Light Combat Aircraft programme in the areas of Loads, Dynamics and Aero-Servo- Elasticity. He returned



to CSIR-NAL as its Director in 2004 and served the Laboratories till his superannuation 2011. Subsequently, Dr Upadhya was appointed as Dr Raja Ramanna DRDO Distinguished Fellow of the Department of Defence Research, MOD at ADA for a period of 4 years. Dr Upadhya has 10 journal papers, and over 150 presentations in international/national conferences, meetings, workshops etc. He has edited Proceedings of three international and national conferences and also has a chapter (with a co-author) on wind and tidal energy in an INSA book on Sustainable Energy to his credit. Presently he is a Distinguished Professor at Jain University in Aerospace Engineering.

Dr Upadhya was also closely associated with the country's novel National Programmes on Smart Materials & MEMS, first as the Programme Director of the first programme NPSM and later as Co-chairman of the Executive Committee of the Second programme NP-MASS. Dr Upadhya was also associated with the Aeronautical Research and Development Board, a national body for aeronautical research under DRDO, first as the Coordinator of its Structures Panel and later as the Convener of its Technical Committee.

Dr Upadhya's contributions have been recognised with the Distinguished Alumnus Award of IIT- Kharagpur and of the Department of Aerospace Engineering, Indian Institute of Science, Visvesvaraya Vijnana Puraskar of Swadeshi Vijnana Andolana in 2008, Election as Corresponding Member, Section 4 (Social Sciences) of the International Academy of Astronautics in 2007 and as a Honorary Member of ISAMPE in 2010, Presentation of Citation by IE(India)- M&ME Division in 2008, IE(India), Rajasthan State Centre in 2010 and the Institute of Smart Structures and Systems(ISSS) in 2012. He is a Fellow of the Indian National Academy of Engineering (INAE) and Aeronautical Society of India. He had also served as President of ISSS and ISAMPE and is a Life Member, Society for Aerospace Quality and Reliability.