



**Prof. Murthy H S N, Professor,
Aerospace Engg. IIT Madras**

Prof. Murthy HSN has been a faculty at IIT Madras for the last 15 years. He has a BTech from IIT Madras and Masters & PhD from Purdue University. He is heading a Project in IIT Madras on future ready multipurpose UAVs (including surveillance and other applications). He is working with a multi-disciplinary team from various Departments at IIT Madras and other Research Laboratories to develop a range of UAVs with next generation technologies. He has been awarded Young Faculty Recognition Award at IIT Madras. He has also worked in the field of fatigue and fracture of metals and composites. He is also interested in the structural weight optimization using novel designs & materials and in the development of new composite materials for applications in impact dissipating armours. He is actively involved in the development of medium endurance, IC engines based UAVs.

“State-of-the-Art and Future of UAVs and Related Technologies”

Utility of UAVs is expanding both in the military and nonmilitary sectors. In fact, there is a worldwide visualization of a dramatic increase in usage of UAVs for civilian purposes. Also, UAVs are manifesting themselves in various forms, sizes and shapes including small and big sized rotary drones, fixed wing aircraft and balloons. They are expected to operate from just above ground level to near space altitudes. Consequently, a great amount of research is being carried out both in airborne and payload technologies related to all these unmanned aircraft. In keeping with times, IITs are carrying out a lot of state of art research in various fields of UAV and related technologies. A panel of academics carrying out research, from all IITs in India having Aerospace Departments, will be present for discussion once the coordinator presents his overview. The coordinator for this session will be Prof. Murthy Haradanahalli S.N., Aerospace Engg, IIT Madras

Co – Panelists - Participating IITs with Anchor Subjects:

IIT MADRAS: UAVs for medium to longer endurance using IC engine propulsion

Prof. P. Sriram, Head, Aerospace Engg.: sriram@iitm.ac.in



Prof. Sriram has been a faculty in the Aerospace Engineering at IIT Madras for last 24 years and is currently serving in his second term as the Head. He earned his BTech from IIT Madras and PhD from Georgia Institute of Technology. In the past, he has served as the Dean (administration) and officiating Registrar of IIT Madras. He has worked in the area of damage analysis of composites and is also interested in aircraft design.

IIT BOMBAY: Tethered aerostats and airships and MDO for UAVs; hardware-in-loop simulators

Prof. R. K. Pant, Lighter-Than-Air (LTA) Systems Lab, Aerospace Engg.: rpant@iitb.ac.in



Prof. Pant got his PhD in Cranfield University and has been a faculty at IIT Bombay for last 29 years. He is interested in the areas of Aircraft Design, LTA Systems, Air Transportation and Multi-disciplinary Optimization (MDO). He has worked exclusively on tethered aerostats and airships. He is an international member of Lighter-Than-Air Technical Committee, AAIA, since 2007 and was its Chairperson during 2014-16. He was also a member of expert committee on Stratospheric Airships (DST). In the past, he has also served for 5 years in the design and engineering department of HAL, Bangalore.

Prof. Hemendra Arya, Aerospace Engg.: arya@aero.iitb.ac.in



Prof. Arya got his BE in Mechanical Engg. from Jodhpur University and MTech and PhD in Aerospace Engg. from IIT Bombay. He has been a faculty at IIT Bombay since 2003. He developed Modelling & Simulation lab with emphasis on system testing and integration. He was involved in the instrumentation & flight testing, and development of Hardware-In-Loop-Simulator for mini aerial vehicles. The work done led to first demonstration of autonomous flight on mini aerial vehicle in the country and won recognition at National & International MAV Competition held at Agra in 2007 and 2008. His laboratory has developed low cost hardware-in-loop-simulator for swarms of upto 16 UAVs. His current research interests are in Hardware-In-Loop-Simulation, UAV system development and testing, Systems Engineering.

IIT KANPUR: Autonomous Rotary wing and VTOL Unmanned Aerial System (UAS) Development

Prof. S. Kamle, Former Head, Aerospace Engg.: kamle@iitk.ac.in



Prof. Kamle has been a faculty in the Aerospace Engineering at IIT Kanpur for last 32 years and has served as the Head of the Department in the past. He is a BTech from IIT Kanpur with PhD from Purdue University. He has worked in the areas of composite structures and composite materials. He is interested in experimental stress analysis and smart materials.

Prof. Abhishek, Helicopter & VTOL Lab., Associate Prof., Aerospace Engg.: abhish@iitk.ac.in



Dr. Abhishek did his B.Tech from IIT Kharagpur and then MS and PhD (all in Aerospace Engineering) from University of Maryland, College Park, USA. He is a recipient of INAE-SERB Abdul Kalam technology innovation national fellowship for 2018-21. His research interests include, helicopter aeromechanics, VTOL unmanned aerial system and wind turbines.

Dr. Mangal Kothari: Associate Prof., Aerospace Engg.: mangal@iitk.ac.in



Dr. Mangal Kothari received the Bachelor of Engineering (B.E.) degree in Electronics Instrument and Control Engineering from the University of Rajasthan. He received Master of Science (M.Sc. Engg.) in Aerospace Engineering from IISc, Bangalore and Ph.D. in Control Engineering from the University of Leicester, UK, in 2011. His research interests include optimal control, nonlinear and adaptive control, flight vehicle guidance and control, state estimation, & motion planning.

IIT KHARAGPUR: Multi-agent systems; MAVs and Parafoils.

Dr. Naba Kumar Peyada, Aerospace Engg.: nkpeyada@aero.iitkgp.ac.in



Dr. Naba Kumar has been a faculty at IIT Kanpur since 2013. He is interested in areas of system Identification/parameter estimation using Neural Networks; Flight Dynamics & Control; Flight Testing Design; Guidance and Control of Rockets, Parafoil, UAV, MAV, WIG-Craft etc.

Dr. Sikha Hota, Aerospace Engg. sikhahota@aero.iitkgp.ac.in



Dr. Hota's received BE in Electrical Engg. from the IEST, Shibpur, ME in Electrical Engg from Jadavpur University and PhD in Aerospace Engg from IISc (2013). She worked in National CLAW team for LCA on behalf of CSIR, NAL. Since 2015, she has been with IIT Kharagpur. Her primary research focus is on Path planning, Obstacle avoidances, Collision Avoidance and Autonomous control of Unmanned Aerial Vehicles, and Multivehicle Coordination.