AED India Learned Society lectures on "*Recent Advances in Aerospace Engineering*".

AeD India and the Southern India Panel held a learned society event on 15th December 2018 at the Aerospace Engineering Auditorium of the Indian Institute of Science (IISc) Bengaluru. The Society for Shock Wave Research India supported the event. Prashant Mahindrakar and Vijay Kothari were the Masters of Ceremonies. There were two lectures on the theme "*Recent Advances in Aerospace Engineering*". 80 engineers and scientists attended the event of whom 39 were IMechE members and 3 were staff.

The first session was Chaired by Professor D Roy Mahapatra, DRDO professor of aerospace Engineering at IISc. The lecture was delivered by Professor S. Gopalakrishnan, Chair, Aerospace Engineering, IISc. Prof. Gopalakrishnan's main areas of interest are wave propagation in complex media, computational mechanics, smart structures, structural health monitoring, mems and nano composite structures. He has published extensively and has received numerous awards, honours and international recognition, including the Royal Academy of Engineering, UK, Distinguished Visiting Fellowship.

His Manoj Kumar Memorial Distinguished Lecture was on ***"Recent Advances in Structural Health Monitoring (SHM) of Composite Structures"***. He described the issues related to ascertaining the health of composite structures on aircraft, many of which are in mission critical areas where the question of permitting flawed composites does not arise. SHM is multi-disciplinary and requires advanced sensor technologies, novel NDE techniques and new modelling methods. Advances in sensor technologies developed at IISc, namely the Magnetostrictive sensor technology based on TERFENOL-D sensors and the non-contact sensor technology based on Laser Doppler Vibrometer were presented. Case studies based on these sensors on aircraft structures were described.

The next session was chaired by Ashok Baweja AeD India Vice Chair. **Dr. S. N. Omkar** the Chief Research Scientist at the Aerospace Engineering Department, Indian Institute of Science, Bengaluru delivered his lecture on "***Drone computing***". This is an evolving area of research that encompasses the entire gamut of computation in navigation & control, data acquisition and data processing. Developments in all these areas were described. Low Altitude Remote Sensing for agriculture, which is at an embryonic stage, was discussed. Algorithms for semantic segmentation and object detection find interesting applications in crop and disease mapping, yield estimation etc.

In both the sessions there were lively discussions regarding the immediate practical use and application of the techniques in the country. In the case of SHM of composites, discussions are to be held soon, facilitated by IMechE, between IISc and Hindustan Aerospace Limited. Similarly, the use of drones with software developed by IISc on Indian Railways (IR) for monitoring the status of track and electrification infrastructure has been introduced to various IR decision makers by IMechE after the meeting. These matters will be taken forward by the AeD and RD in India.

Ashok Baweja summed up the proceedings and Vijay Raman AeD India Chair presented mementos to the distinguished speakers. He also delivered a Vote of Thanks to the IISc and the Aerospace Engineering Department for supporting the events of the day.

Vijay Raman AeD India Chair Delivering the Vote of Thanks