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Aerospace technology for global development and progress

It is time to form international collaborations for the application of aerospace technologies to peaceful development and the improvement of the human condition. Future global welfare demands improvements in transportation, access to raw materials, energy generation, and mitigation of natural disasters. The advances featured in this Session support the unifying theme of enhancing and protecting global welfare by means of aerospace technology. For resource surveys and disaster area inspection, new Earth orbit design techniques, and new fine resolution, imaging techniques improve our ability to assess crisis situations. Progress in these areas also confers revolutionary benefits to science and astronomy. A serious threat is the ever-increasing orbital debris that may soon render launch into near-Earth space impractical. Orbital debris mitigation involves the advances in robotics, proximity operations, design optimization, and de-orbit technologies reported in this session. A cosmic threat to human civilization and to all terrestrial life is the possible collision with Near Earth Asteroids (NEAs). Numerous hazardous NEAs remain to be discovered and characterized. In this session, we consider advances in deep space surveillance for NEA discovery, and several innovative methods for NEA *mitigation*, i.e. deflection of NEAs on collision course with Earth. Mitigation technologies feature advances in astronomy, manned spaceflight, proximity operations, trajectory design, and materials science. Most important for future prosperity is the development of new energy sources that are safe and abundant. In this area, we consider new advances in space-based solar power systems. The threats and challenges so far mentioned involve the serious legal and governmental policy issues that are also explored in this session. Finally, we discuss various mechanisms to foster international cooperation to reap the benefits of aerospace technologies.

Biography

David C Hyland earned the SB, MS and PhD degrees at MIT in 1969, 1971 and 1973, respectively. Through 1983, he was staff member of the MIT Lincoln Laboratory. Beginning from 1983, he led an advanced technology group at Harris Corporation and became Senior Scientist. He joined the University of Michigan in 1996 as Professor and Chairman of Aerospace Engineering. In 2003 he joined Texas A&M University as Associate Vice Chancellor, Associate Dean of Research, and Professor of Aerospace Engineering, and Physics. Most recently, he gained the position of Director of Space Science and Engineering Research.

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