Foreword

Space exploration and space travel have been the dream of mankind since early ages. When the first sputnik was launched into space in 1957 by USSR, the entire world was dramatically ushered into the space age. With the remarkable developments that have taken place in space sciences and technology during the last two decades, some of mankind's wildest dreams and visions—such as men walking on the moon, close-up pictures of Venus, Mars and Jupiter, in-situ exploration of planets, space docking near earth, space shuttle transportation—have all come true. The space era has opened up new windows into the skies, enabling scientists to obtain a view of the universe in X-rays and in ultraviolet, infrared and gamma rays, which had been inaccessible earlier. Developments in space technology now offer unique platforms to carry out remote sensing of our natural resources and unearth new ones in agriculture, forestry, mineralogy, hydrology, oceanography, geography and even cartography. Mass communication and meteorological observation on a global scale have now become a practical reality with geosynchronous satellites. Thus, space science and technology seem to offer a new hope for improving the quality of life on earth.

Based on the firm belief that through purposeful, selective and imaginative utilisation of space technology, it is possible to provide unique inputs into the process of national development, the Indian Space Research Organisation (ISRO) entered into an agreement in 1972 with the USSR Academy of Sciences for launching the first Indian Satellite from a Soviet cosmodrome. With the launching of this satellite, the Aryabhata, on 19 April 1975, into a near-earth circular orbit at a height of 600 km, India entered the space age. The primary aim of Aryabhata was to establish the necessary expertise and infrastructure in satellite technology. Even though the original estimated life of Aryabhata was only 6 months, all the technological systems on the satellite have been functioning satisfactorily for the last three and half years.

These special issues of the Academy's Proceedings on Aryabhata, containing various articles on the technological design of the spacecraft, are the outcome of the keen interest taken by the Academy to publish a technical account of the project. In particular, the keen interest taken by Prof. S Dhawan, the President of the Academy, and Prof. R Narasimha, Editor for Engineering Sciences has been an important factor, without which these issues could not have been published. We are thankful to all the authors of various articles who have responded enthusiastically in providing the articles in time. The Editors are grateful to Dr. P N Pathak, Mr V Kalyana Raman, Dr V Siddhartha and Dr Esther Ramani who provided very valuable assistance in editing the papers appearing in this special issue.

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Guest editors