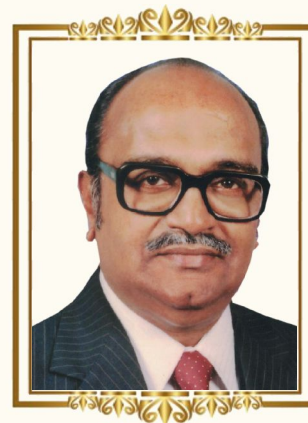




## DR. A. E. MUTHUNAYAGAM



Dr. A. E. Muthunayagam is a renowned Space Scientist and is known as the father of Liquid Propulsion Technology in India because of his outstanding contributions.

2. Born on 11<sup>th</sup> January 1939, Dr. Muthunayagam received his Bachelor of Engineering degree in Mechanical Engineering in first class with Honours from the University of Madras in 1960, -Master of Engineering in Power Engineering (Mechanical) from the Indian Institute of Science, Bengaluru in 1962.— Ph.D from the School of Mechanical Engineering of Purdue University, USA in 1965. —LL.B from Kerala University in 1975. He also received Honorary Doctorates; from Andhra University in 1997—from Anna University in 1998 and — from Karunya University in 2008.

3. Dr. Muthunayagam joined ISRO in 1966 under Dr. Vikram Sarabhai after completing a NASA sponsored project in an aerospace company in USA. He contributed significantly to the development of Propulsion Technologies in ISRO. As the founder - Director of the Liquid Propulsion Centre of ISRO, he developed it as the lead centre for all types of liquid propulsion systems required for ISRO's launch vehicles and spacecrafts. He also established the Test facilities with accessories to test and qualify all liquid propulsion systems and sub system at Mahendragiri which later became an independent ISRO Propulsion Complex. The high thrust liquid stage with Viking Engine technology transfer from SEP, France and indigenously developed terminal stage with cut off and restart capability which are used in all PSLV and GSLV launch vehicles are significant achievements. He initiated the development of Cryogenic Engine & Stage indigenously and actively negotiated with Russian space agency for acquisition of Cryogenic technology. During his tenure ISRO progressed from launching small, imported rockets, known as Sounding Rockets which were used to study the upper atmosphere of the earth, to building bigger and more powerful ones that could put satellites into orbit. These Satellites paved the way for the country to produce its own images of the earth, keep watch on the weather, and provide communication and broadcasting assistance.

4. After serving in the Indian Space Program for 29 years, Government of India posted Dr. Muthunayagam in April 1995 as Secretary, Department of Ocean Development (DOD), Government of India where he addressed the programs on Antarctic research, the United Nations Convention on the Law of the Sea (UNCLOS), Marine living and non-living resources, Intergovernmental Oceanographic Commission (IOC) of United Nations Educational Scientific and Cultural Organization (UNESCO), Integrated Coastal and Marine Area Management (ICMAM), Ocean Observation and information services, etc

5. During his tenure at Department of Ocean Development (April 1995 to January 2001) Dr. Muthunayagam had the opportunity to work under four Prime Ministers. Shri PV Narasimha Rao, Shri I K Gujral, Shri H D Deve Gowda and Shri Atal Bihari Vajpayee. All of them supported his initiatives. Lack of own institutional infrastructure during 1990's was a serious limitation that the Ocean Department faced in the implementation of the priority program. He addressed this issue and extended the activities of the department to include a number of technology development programs with the participation of National laboratories of CSIR, ICAR and IITs, there by more than doubling the financial out lay.

6. Dr. Muthunayagam established three autonomous institutes under the management of the DOD; National Institute of Ocean Technology (NIOT) at Chennai, National Centre for Antarctic and Ocean Research (NCAOR) at Goa and Indian National Centre for Ocean Information Service (INCOIS) at Hyderabad. This is in addition to the two Attached Offices of the department; - Integrated Coastal and Marine Area Management (ICMAM) Project Directorate in Chennai and Sagar Sampada Vessel Management and Marine Living Resource Coordination Cell in Kochi.

7. Dr. Muthunayagam also has obtained an Indian patent No 196396 dated 21.2.2003 titled "A Process, System and configuration for Desalination of Sea Water". He has proposed an 'Integrated Desalination System' with Ocean Thermal Energy Conversion (OTEC) System for power generation and Low Pressure Distillation (LPD) System for desalination which will be sustainable, environment friendly and requiring no external power supply for operation. He served as Chairman of the Intergovernmental Oceanographic Commission for the Central Indian Ocean (1996-2001). He was also Chairman, Commission for the Conservation of Antarctic Marine living Resources (1998-2000) and Vice chairman of Intergovernmental Oceanographic Commission (IOC) for two years (1996-1998). He is a Fellow of Astronautical Society of India,— Fellow of Aeronautical Society of India,—Fellow of Indian National Academy of Engineering,—Fellow of The Institution of Engineers.

8. Dr. Muthunayagam is a recipient of Dr. V. M Ghatage Award for the year 1989 from Aeronautical Society of Indian-Mechanical Engineering Design Award 1995 from the Institution of Engineers (India), National Design and Research forum,—National award for Life Time Achievement in Ocean Science and Technology 2007 from Ministry of Earth Sciences, Government of India, — ISRO Outstanding Achievement Award 2008 from Department of Space, Government of India,—Aryabhata Award 2010 from Aeronautical Society of India for outstanding contribution in Propulsion Technology, —Dr KCG Verghese Excellence Award 2023 for Life Time Achievement from Hindustan Group of Institutions, Chennai.