



## Prof. Krishnaswamy Kasturirangan Professor



### **Most important awards, prizes and academies**

*Awards:* Three civilian awards from the Government of India: the Padma Shri (1982), Padma Bhushan (1992) and Padma Vibhushan (2000); Intercosmos Council Award, Soviet Academy of Sciences (1981); Dr. K.R. Ramanathan Memorial Gold Medal, Indian Geo-Physical Union (1995); M.P. Birla Memorial Award in Astronomy (1997); Goyal Award, Goyal Foundation (1997); Biren Roy Memorial Lecture Medal, Indian Physical Society (1998); Shri Murli M. Chugani Memorial Award for Excellence in Applied Physics, Indian Physics Association (1999); H.K. Firodia Award for Excellence in Science & Technology (1999); IGU Millennium Award, Indian Geo-Physical Union (1999); M.N. Saha Birth Centenary Award, 87th Indian Science Congress (2000); Aryabhata Medal Award 2000, Indian National Science Academy (2001); 4th Sri Chandrasekarendra Saraswati National Eminence Award, South Indian Education Society (2001), International Collaboration Accomplishment Award, International Society for Air Breathing Engines (2001); Officer of the Légion d'honneur, France (2002); Rathindra Puraskar by Visva Bharati, Shantiniketan (2002); V. Krishnamurthy Award for Excellence, Centre for Organisation Development (2002); G.M. Modi Award for outstanding contribution in innovative Science, Gujarmal Modi Science Foundation (2002); Bhoovigyan Ratna Award, Bhoovigyan Vikas Foundation (2002); 8th National Science & Technology Award for Excellence, Jeppiaar Educational Trust (2003); 6th Ram Mohan Puraskar, Ram Mohan Mission (2003); Ashustosh

Mukerjee Gold Medal, Indian Science Congress Association (2004); Lifetime Contribution Award in Engineering, Indian National Academy of Engineering (2004); Prof. M.N. Saha Memorial Lecture Medal, National Academy of Sciences of India (2004); Brock Medal of the International Society for Photogrammetry and Remote Sensing and American Society for Photogrammetry and Remote Sensing (2004); Alan D. Emil Memorial Award, International Astronautical Federation (IAF) (2004); Balvantbhai Parekh Gold Medal 2005 for life-time Achievements in Space Science by The Indian Planetary Society, Mumbai (2005); Aryabhata Award 2003 by Astronautical Society of India (2005); Lifetime Achievement Award of the Asia-Pacific Satellite Communications Council, Singapore (2005); Lakshmipat Singhanian – IIM Lucknow National Leadership Award 2006 by Indian Institute of Management, Lucknow (2006); Theodore Von Karman Award by International Academy of Astronautics (IAA), France (2007); Lifetime Achievement Award, Indian Space Research Organisation (2008); Vikram Sarabhai Memorial Gold Medal by Indian Science Congress Association (ISCA) (2009); Making a Difference Award at the Annual ESRI International User Conference, San Diego, USA (2009); Prof YT Thathachari Lifetime Achievement Award by Bhramara Trust of Prof. Y T Thathachari and Smt Madhuri Thathachari of Mysore (2009); JK Lakshmipat University Laureate Award, Jaipur (2013); Distinguished Academician Award, IIT, Patna (2013); XXIV Prof. Daulat Singh Kothari Memorial Oration Award, Defence Laboratory, Jodhpur (2016); Hari Om Ashram Prerit Senior Scientist Award (2016); Lakshya Distinguished Leader Award, National Institute of Industrial Engineering, Mumbai (2016); Lifetime Achievement Award, Bangalore Management Association, Bangalore (2016); Prof MGK Menon Memorial Award, The National Academy of Sciences, India (2018); Lifetime Excellence Award, Reva University (2020); Hall of Fame, Bengal Chamber of Commerce & Industry, Kolkata (2020); “Personality of the Year Award” from Federation of Indian Chamber of Commerce & Industry (FICCI) (2021). *Academies and Professional organisations*: President, Indian National Academy of Engineering (2005-06); Vice-President, Indian Academy of Sciences (1998-2000); President, Indian Academy of Sciences (2001-3); Chairman, Board of Governors, Indian Institute of Technology, Madras (2000-6); Chairman, Council of Raman Research Institute, (since 2000); Chairperson, Research Council of National Aerospace Laboratories, Bangalore (2001-3); Member, Board of Governors of IIT, Roorkee, (2001-3); General President, Indian Science Congress (2002-3); Chairman, Governing Council, Indian Institute of Science (since 2004); Chairman, Governing Council, Aryabhata Institute of Observational Sciences (since 2003); Vice-President, International Academy of Astronautics (2003-5); Member, International Academy of Astronautics Sub-Committee on Mars Exploration (1992-93); Member, COSPAR Bureau (1994-2002), Member, Scientific Advisory Committee to the Cabinet, Member, Board of Trustees of the International Academy of Astronautics, Paris; Member, Advisory Board of International Space University, Strasbourg, France; Indian Representative, IEEE Space Panel (1992); Chairman, COSPAR Panel on Space Research in Developing Countries (1994-2000), Chairman, International Committee on Earth Observation Satellites, (1997-98), Chairman, Governing Body of the United Nations Centre for Space Science and Technology Education in Asia and the Pacific (1995-2004); Chairman, Senior Officials Committee of UN-ESCAP Meet (1999-2000) leading to Delhi Declaration; Co-Chairman, International Academy of Astronautics Study Committee on 'Space for Peace', (2002-

03); Vice-President, International Academy of Astronautics (2003-05); Chairman, Governing Council, Indian Institute of Science (2004-14); General President, Indian Science Congress (2002-3); President, Indian National Academy of Engineering (INAE) (2005-6); Life Time Professor, Delhi University, Delhi (2012 onward); President, The National Academy of Sciences, India (2013-14); INAE Satish Dhawan Chair of Engineering Eminence (2015-17). *Fellowships/Memberships*: Indian Academy of Sciences; Indian National Science Academy; National Academy of Sciences of India; Indian National Academy of Engineering; Astronautical Society of India; National Telematics Forum; Indian Meteorological Society; Astronomical Society of India; Institution of Electronics and Telecommunication Engineers; Aeronautical Society of India; Kerala Academy of Sciences; Indian Institute of Chemical Engineers; Indian Physics Association; Indian Society of Remote Sensing; Indian Science Congress Association; Member, International Astronomical Union (since 1982); Member, International Academy of Astronautics (since 1985); Fellow, World Academy of Sciences (since 1996); Honorary Fellow, Cardiff University, UK (since 2006); Honorary Member, International Academy of Astronautics (2018); International Astronomical Union; Third World Academy of Sciences.

### **Summary of scientific research**

Dr. Kasturirangan was responsible for directing the Indian Space programme for over 9 years, as Chairman of ISRO and the Space Commission and as Secretary to the Government of India in the Department of Space, before laying down office on 27 August 2003. He was earlier the Director of ISRO Satellite Centre, overseeing the development of new generation spacecraft, the Indian National Satellite (INSAT-2) and the Indian Remote Sensing Satellites (IRS-1A and 1B) as well as scientific satellites. He was also the Project Director for India's first two experimental earth observation satellites, Bhaskara-I and II. Dr. Kasturirangan has made wide-ranging contributions to the design and development of sensor and telescope systems for astronomy research in optical, uV, X-ray and gamma ray radiation domains that have been successfully flown in balloons, rockets and satellites over the last three decades. He was one of the earliest to determine the spectrum of diffused cosmic x-rays in the 20-200 Kev range, investigate the time variabilities of ScoX-1, CygX-1 and HerX-1 sources, detect the change in the spectral characteristics during the state transition of CygX-1 and hard X-ray spectral behaviour of HerX-1. He studied super luminal source GRS 1915-105 relating to quasi-regular bursts and detection of x-ray dips as well as relating these with accretion models. He also worked on the conceptualization, planning, implementation and interpretation of an experiment to search for a possible unique ring structure around the Sun during a total solar eclipse and placed useful upper limits to the related mass. He has also carried out fundamental investigations on the ionization effects of cosmic x-rays in D-region of the earth's ionosphere in the context of the first quantitative estimation of the perturbation effects of ionization in the night time low-latitude D-region during the transit of ScoX-1. He has led the pioneering efforts to develop world-class Remote Sensing satellites, which today is a key element of India's space capability. More recently, he played an active role in the definition of India's first dedicated multi-wavelength high-energy astronomy observatory and the first mission to the Moon known as Chandrayaan-I. Finally, during the period 1994-2003, as Head of India's space programme, he

oversaw a multi-dimensional space endeavour, encompassing development and operationalisation of new satellites and rockets, space applications as well as space sciences. The confidence to undertake the Mission to the Moon and the development of the sophisticated astronomical satellite ASTROSAT, is the outcome of the major achievements witnessed in this period. Also, the efforts during this period placed India as one of the leading space-faring nations among a handful of countries around the world.

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### Main publications

Contributed around 220 papers which were published in national and international journals; co-authored/edited books/journals: *The Aryabhata Project* by U.R. Rao and K. Kasturirangan (1979); *Perspectives in Communications* by U.R. Rao, K. Kasturirangan, K.R. Sridhara Murthi and Surendra Pai (1987); *Space - In Pursuit of New Horizons* (A Festschrift for Prof. U.R. Rao) by R.K. Varma, K. Kasturirangan, U.S. Srivastava and B.H. Subbaraya (1992); *Role of Developing Countries in Ground Based Experiments in Support of Space Observations for Global and Regional Studies* edited by K. Kasturirangan and R.R. Daniel (COSPAR Journal Advances in Space Research, 1996); *The Geocentric Planets* by K. Kasturirangan and R.K. Kochhar; *Human Connectivity Through Space* (Science and Technology for Achieving Food Economic and Health); *Problems of Space Science Research: Education and the Role of Teachers* edited by K. Kasturirangan, J.L. Fellous, S.C. Chakravarthy, R.S. Young and M.J. Rycroft (COSPAR Journal Advances in Space Research, 1997).