

A P Mitra Memorial Lectures

The NPL Former Scientists Forum (NPL-FSF) has instituted an annual lecture series in the memory of one of its very distinguished former Patrons, the late Dr. A P Mitra, Ex Director, NPL and Ex DG CSIR. This lecture series aims at providing a platform to honour the lifetime contributions of the late Dr. A P Mitra (FRS) to Radio and Atmospheric Sciences in India and on an international level. The funds for holding the APM annual lecture series primarily come from funded by an endowment created out of contributions from the erstwhile National Organizing Committee for the URSI-GA 2005, the late Mrs. Sunanda Mitra, wife of Dr. A P Mitra, the Mitra family, Dr. K K Mahajan and former students and associates of Dr. Mitra.



First A P Mitra Memorial Lecture (2014)

The 1st Annual AP Mitra Memorial Lecture was held at NPL, New Delhi on 16 September, 2014 to coincide with the International Ozone Day, a subject in which Dr. Mitra's contributions are well known. Prof. Govind Swarup, an internationally renowned radio astronomer, was the distinguished speaker and his talk was entitled - '**A Tribute to the late Dr. A.P. Mitra, FRS**'. This lecture was organized jointly by the NPL Former Scientists Forum (NPL – FSF) and the National Physical Laboratory in the NPL auditorium.



Occasion: First Dr. A P Mitra Memorial Lecture
 Sh. S C Garg, President, NPL-FSF and Dr. P S Ahuja, Director General, CSIR, lighting the Lamp
 Others from Left to Right are: Prof. R C Budhani, Director, NPL,
 Dr. Amitava Sengupta, Chairman, Organizing Committee for the Lecture and Prof. Govind Swarup
 NPL Auditorium (16. 09. 2014)

Prof. Govind Swarup, formerly at Tata Institute of Fundamental Research (TIFR), has been one of the pioneers of radio astronomy in India. He is known for building indigenous powerful observational facilities for research in radio astronomy and also for his research contributions in astronomy and astrophysics. As one of the eminent scientists in Radio Science, and also as a lifelong associate of Dr. Mitra both at the personal and professional levels, Prof. Swarup was perhaps one of the most appropriate persons to deliver the first APM lecture. Dr. P.S. Ahuja, DG, CSIR presided over this function. Dr R.C. Budhani, Director, NPL and Sh S.C. Garg, President NPL–FSF initiated the function by welcoming the guests and Dr. A. Sen Gupta, Outstanding Scientist, NPL, introduced the speaker.

In his talk, Prof. Swarup seamlessly tied in Dr. Mitra's career achievements and his own to describe the growth of Radio

Astronomy in the country. He described some of the outstanding scientific contributions by Dr. A. P. Mitra, covering the fields of ionosphere; chemistry of the atmosphere; space research; climate change and global warming, etc. He described the key areas in which Dr. Mitra had made outstanding contributions since 90's, including:

- Spearheading the Indian Middle Atmosphere Programme (IMAP), which started in 1982 to examine the role of the middle atmosphere in determining climatic change.
- The pioneering measurements of methane emission from paddy fields that reduced the Indian contribution of Carbon budget to one tenth of the initial estimates made by US-EPA (Environmental Protection Agency)
- The Indian Ocean Experiment programme (INDOEX).
- Setting up some large national and international level facilities like the MST Radar at Tirupati, Free Air Carbon Dioxide Enrichment (FACE) facility at the Indian Agriculture Research Institute, New Delhi, and Bose Institute of High Altitude Centre for Astro-particle Physics and Space Science at Darjeeling etc.

Prof. Swarup went on to talk about his own collaborations with Dr. Mitra and to the growth of Radio Astronomy in India. Prof. Swarup's initial work at NPL led to the development of Giant **Metre** Radio Telescope (GMRT) and Radio Telescopes at Ooty.. GMRT is being used by hundreds of astronomers from India and abroad for investigating radio emission from nearby objects, such as Jupiter, Sun, objects in our galaxy, pulsars, distant radio galaxies and quasars.

Prof. Swarup had also been associated as a staff member of NPL during 10. 07. 1950 to 15. 02. 1953, before leaving for USA He reverted to NPL in July 1955 and remained associated with the Laboratory till August 1956, before leaving to joining the Tata Institute of Fundamental Research. He was also enrolled as a Member of the NPL Former Scientists Forum.

A video-coverage of the Lecture by Prof. Govind Swarup was also made by the NPL Former Scientists Forum.

Second A P Mitra Memorial Lecture (2015)

The Second A P Mitra Memorial Lecture, held at the Convention Centre, Jawaharlal Nehru University, New Delhi, was organised as an evening lecture on 17th November 2015, as a part of the 2nd Regional Conference on Radio Science (RCRS-2015) organized by the Indian National Committee of URSI (INCURSI) from 16th to 19th November 2015. In the light of the experience of organizing the First A P Mitra Memorial Lecture, it was decided by the NPL Former Scientists Forum (NPL-FSF) to have its own Organization Committee under the Chairmanship of Dr. Amitava Sen Gupta, who was assisted by Shri S C Garg, the President of the Forum, Dr. K K Mahajan, Prof. Vikram Kumar, Dr. Mahesh Chander, Dr. S L Jain, Shri G K Arora, Shri R B Saxena, Dr. Hari Kishan, Dr. S K Halder and Dr. (Ms.) Patralekha Mitra, daughter of Dr. A P Mitra, at various stages. The lecture was organized jointly by INCURSI and the NPL Former Scientists Forum.

The members of the Local Organizing Committee of the Conference included, Dr. Rajamani Paulraj, the Convener of the Conference, Prof. Prasenjit Sen, Pro-Vice Chancellor Jawaharlal Nehru University, and Prof. S Ananthkrishnan, Chairman of the Local Organization Committee who presided over the Conference. Dr. Amitava Sen Gupta was the co-chairman of the Conference.

The Second A P Mitra Memorial Lecture was delivered by Dr. Krishnaswamy Kasturirangan, Chancellor, Jawaharlal Nehru University and Former Chairman ISRO, and Member Planning Commission on **"Space Science in India – Some Reminiscences & Prospects"** was preceded by lighting of lamps, garlanding of Dr. Mitra's portrait, floral tributes to his memory, welcome address by Shri S C Garg and introduction of the speaker by Dr. Amitava Sen Gupta, emphasizing that Dr. Kasturirangan had been directing the Indian Space Research Programme for over 9 years as Chairman of ISRO and the Space Commission and as Secretary to the Department of Space, Government of India.

Dr. Kasturirangan began his talk by recounting the key contributions of Dr. A P Mitra, including founding of the Radio Science Division of the National Physical Laboratory, and being the driving force behind the Indian programme on International Geophysical Year (IGY 1957-58), International Quiet Sun Year (IQSY 1964-65) and his contributions to the studies of the ozone layer, atmospheric chemistry and greenhouse gas emissions. He then went on to give a detailed and lucid description of the progress of space science in India highlighting, in particular, the evolutions of Atmospheric Sciences, Space Meteorology, and Ground, Balloon, Rocket and Space based Astronomy in India. He gave detailed descriptions of the exciting scientific findings of the recent landmark programmes of ISRO – the Chandrayaan and Mangalyaan missions. He also touched upon the objectives, payloads and the very initial results from the most recent ASTROSAT mission of the ISRO, which had just been launched on 28th September, 2015. He concluded by remarking that the Indian space science endeavour for over 5 decades has created

frontier science programs in astronomy astrophysics and planetary sciences, which is planned to be exploited and expanded in the coming years towards cutting-edge research in the above areas, as well as planetary exploration as a part of India's thrust in fundamental scientific research.



Occasion: 2nd URSI Regional Conference on Radio Science, 16-19 November 2015

Event: Second A P Mitra Memorial Lecture by **Dr. Krishnaswamy Kasturirangan**,
Chancellor, Jawaharlal Nehru University and Former Chairman ISRO, and Member Planning Commission on
"Space Science in India – Some Reminiscences & Prospects"

Dr. Kasturirangan paying Floral Tribute to the memory of Dr. A P Mitra

Others from Left to Right are: **Shri R B Saxena**, Secretary, NPL-FSF; **Ms. Meghna Rao**, granddaughter and **Ms. Patralekha (Mila) Mitra**,
daughter of Dr. A P Mitra; **Shri S C Garg**, President, NPL-FSF; **Dr. Amitava Sen Gupta**, Vice President, NPL-FSF
and Chairman, Organizing Committee for the Lecture.

Also seen in the Photograph: **Dr. Krishna Achutarao**, Husband of Patralekha, Professor, IIT Delhi
Convention Centre, Jawaharlal Nehru University, New Delhi (17. 11. 2015)

The lecture was followed by his answers to questions from the audience. As a token of appreciation for and in memory of the lecture, Shri S C Garg presented him a shawl on behalf of the NPL Former Scientists Forum. Shri R B Saxena, Secretary, NPL Former Scientists Forum, proposed the vote of thanks.

The programme concluded with a dinner and informal meetings with the audience, which included a number of members of NPL-FSF, Meghna Rao (granddaughter) and Patralekha (Mila) (daughter) of Dr. A P Mitra, Dr Krishna Achutarao, husband of Patralekha and Professor at IIT Delhi, and Dr. S K Majumdar, a Ph.D. student of Dr. Mitra, as well as Dr. N Rathnashree, Director Nehru Planetarium, and Mr. C B Devgun, President SPACE India, who were invitees of the family.