भौतिक अनुसंधान प्रयोगशाला, अहमदाबाद

Physical Research Laboratory, Ahmedabad

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70_PRL Ka Amrut Vyakhyaan

Wednesday, 30 November 2022

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"Building Dakshin Gangotri at Antarctica: A Miracle"

Dr. Harsh K. Gupta

NASI Platinum Jubilee Fellow,
President, Geological Society of India,
Member, Atomic Energy Regulatory Board, India,
National Geophysical Research Institute, Hyderabad.

https://youtu.be/mERLfS7yM-o

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Title: "Building Dakshin Gangotri at Antarctica: A Miracle"

Speaker: Dr. Harsh K. Gupta

NASI Platinum Jubilee Fellow, President, Geological Society of India, Member, Atomic Energy Regulatory Board, India, National Geophysical Research Institute, Hyderabad.

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Abstract

The 3rd Indian Scientific Expedition to Antarctica led by Dr. Harsh Gupta established India's first wintering station "Dakshin Gangotri' in a record time, during the Antarctic summer of 1983/84. This record remains unbeaten to this day. The talk recreates the atmosphere of excitement, challenge, and fierce determination to make the country proud, along with meticulous planning and execution, which enabled this 'Miracle' feat! Tireless industry was the antidote to briefly dampened spirits after the near fatal MI-8 helicopter crash 3 days after arriving at Antarctica. Imagine digging 1.5 meter deep over an area of 620 square meters for placing the raft foundation and building a double storied structure complete with heating, laboratories, snow melting tank, commissioning of three generators, fuel dump, living quarters for 12 wintering team members, setting up of a medical room, communication room, gymnasium, recreation room etc. in 60 days. Several days were lost due to white-outs and blizzards. The triumph of Dakshin Gangotri bears testimony to the commitment to scientific exploration, both outstanding team and those who extended unconditional support. The well-illustrated book takes you through the magic journey of constructing and populating "Dakshin Gangotri".

The Speaker

Prof. Harsh Gupta is presently the NASI Platinum Jubilee Fellow, President Geological Society of India and a Member of the Atomic Energy Regulatory Board, India. Dr Harsh Gupta obtained his BSc (Hons.), MSc from the Indian School of Mines and PhD from the University of Roorkee. He was a Member of the National Disaster Management Authority of India during 2011-2014), Secretary to the Government of India, Department of Ocean Development (2001-2005), Director National Geophysical Research Institute, Hyderabad (1992-2001), Advisor, Department of Science and Technology, Government of India (1990- 1992), Vice Chancellor, Cochin University of Science and Technology (1987- 1990), Director, Centre of Earth Science Studies, Trivandrum (1982- 1987) and, Adjunct Professor, the University of Texas at Dallas (1978- 2001). Dr Gupta's work is globally recognized for developing criteria to discriminate artificial water reservoir-triggered earthquakes from normal earthquakes, which are globally applied and for finding safe sites for the construction of reservoirs and for Making a medium-term forecast of an M~8 earthquake in the north-east India region in 1986 which came true on August 6, 1988. He chaired the Steering Committee of the Global Seismic Hazard Assessment Program (G-SHAP) from 1992 to 1999, which produced the Global Seismic Hazard map. He also pioneered the Gas Hydrate program and carried out detailed studies of the genesis of triggered earthquakes in the Koyna region to make successful short-term earthquake forecasts. Dr Gupta has published over 200 scientific papers in internationally reputed journals, authored five books by Elsevier and Springer, and edited 21 volumes. His first book, "Dams and Earthquakes", published in 1976, was translated into Russian and Chinese languages. Dr Gupta compiled and edited the "Encyclopaedia of Solid Earth Geophysics". The second edition of this Encyclopaedia (2050 pages, two volumes) was published by Springer in 2021. Dr Gupta is the recipient of several awards. These include the SS Bhatnagar Prize (1983), the USSR Academy of Sciences' "100 Years of International Geophysics" Memorial Medal (1985), and the National Mineral Award (1991). He received the Indian Geophysical Union Millennium Award (2000), Indian Society of Applied Geochemists Millennium Award (2000), Jawaharlal Nehru Birth Centenary visiting Fellowship (2003) and Professor K Naha Memorial Award (2004) of INSA, National Mineral Award for Excellence (2002). He was awarded Padma Shri by the Government of India (2006), the Nayudamma Memorial Gold Medal Award (2008), the National Award in Ocean Science & Technology (2008) and the Waldo E Smith Medal Award of the American Geophysical Union (2008). Dr Gupta is the first so far and the only scientist from the developing world to be awarded Waldo E. Smith Medal by the American Geophysical Union. He is also the second from Asia, the only other awardee from Japan. Dr Gupta received the Axford Gold Medal of the Asia Oceania Geosciences Society (2016) and IUGG Honorary Fellowship (2019) and is the elected Foreign Member of the Russian Academy of Sciences (2022). He is a fellow of the Indian National Science Academy, New Delhi.

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About PRL

The Physical Research Laboratory (PRL), known as the “cradle of space science” in India, is one of the premier research institutes founded in 1947 by Prof. Vikram Sarabhai, a renowned Cosmic Ray Scientist, a great visionary and institution builder. PRL played a seminal role in producing a highly motivated cadre of space scientists and the technologists of highest international repute. The first scientific rocket launched from Thumba on 21st November-1963 and many other rockets launched thereafter contained payloads developed at PRL. Dr. Sarabhai initiated many of these scientific and technical activities at PRL which eventually led to the formation of the Indian Space Research Organization (ISRO). Therefore, PRL is known as the “cradle of space science” in India. Further, the research in the area of Plasma Physics expanded to the formation of the Institute of Plasma Research (IPR).

As an institution PRL is unique in that it conducts fundamental research in a wide range of research areas from the Earth to the cosmos, and comprising Astronomy and Astrophysics; Solar Physics; Space and Atmospheric Sciences; Theoretical Physics; Geosciences; Atomic, Molecular and Optical Physics, Astrochemistry; and Planetary Sciences and Space Exploration. PRL is one of the rare research institutes of international repute wherein research in such diverse fields of sciences is carried out using several state-of-the-art experimental facilities that exist under one umbrella.

Along with the ongoing research, several new initiatives have been taken up during the last few years. The Multi-Application Solar Telescope (MAST) at Udaipur Solar Observatory has been operationalized. PRL initiated scientific programmes in frontier areas of research, which include a search for exo-planets, laboratory studies of interstellar grains, laboratory synthesis of cold astromolecules and experimental studies in the field of quantum optics. PRL is also developing several scientific payloads as a part of ISRO’s larger vision and contributing to roadmap for competitive scientific exploration of the solar system and beyond. In particular, PRL has been contributing significantly not only in building instruments for space missions, such as Chandrayaan-1, Chandrayaan-2, AstroSat and upcoming Aditya-L1, Chandrayaan-3 and planetary and space missions, but also by bringing out new and insightful science results.

PRL contributes to several national and international research programmes and to human resource development through its Doctoral and Post-Doctoral Programmes, capacity building programmes, such as UN Course on Space Science, and science and engineering internship programmes. PRL contributes significantly to society through its Outreach Programmes by periodically organizing science exhibitions and Open Houses, planned visits of students of various school and college to PRL, and popular talks at various institutions to not only share the excitements of the advancements of contemporary scientific findings but also to encourage students to take up sciences as their research career.