

## **Dr Vinod Gaur**

Vinod Gaur studied Geophysics at Banaras University and at Imperial College where he discovered the hitherto unsuspected 'host rock effect' in geo-electromagnetics. For this discovery in 1959, he earned the degree of Doctor of Philosophy from the University of London. His academic career began immediately thereafter as a Scientist at the National Physical Laboratory, UK.

In 1966, he joined the University of Roorkee as Professor where he initiated a modern academic programme in Geophysics stimulated by the insightful contents of signal analysis, inverse theory and computational geophysics. These were subsequently propagated by the UGC to other universities by sponsoring short-term intensive courses that were organized by him at Roorkee. In 1983, he moved to Hyderabad as Director of the National Geophysical Research Institute and set about restructuring the Institute's research programmes with scientific rigour, guided by hypothesis formulation and experiment design.

Dr Gaur's landmark contributions to science include discovery and explanation of the host-rock effect in the electromagnetic response of subsurface geological conductors (1959), experimental confirmation of the hypothesis that the Indian plate under-thrusts the Asian plate, and its numerical estimate along the Main Himalayan Fault (1971) by direct measurement of slow deformation across a tunnel in the Tons valley, Uttaranchal at  $\sim 1$  cm per year, discovery of the thick Deccan lithosphere using the first seismic tomography experiments in India (1986), the first quantitative measurement of the Indian plate velocity with respect to the Eurasian using Global Positioning System (GPS) Geodesy and an upper bound for the strain rate in the Southern Peninsula (1995), the first high resolution crustal images using broadband seismology of the south Indian shield (1996) and of north-eastern India (2005), and the first Indian experiment to constrain global Carbon fluxes (2007) over India and Central Asia, through inversion of ultra-high precision atmospheric carbon concentrations (0.1 ppm) measured at the Greenhouse gases laboratory established by him at the Indian Astronomical Observatory, Hanle, Ladakh. His current researches include an enquiry into the anomalous distribution of elastic strains in north-eastern India and at the western extremity of the Indo-Eurasian convergence zone, as well as ways to minimize uncertainties in the inverted estimates of global carbon fluxes.

Dr Gaur is intensely passionate about catalysing learning amongst the young at a deeper conceptual level. His courses are accordingly designed with focus on deductions from first principles, and recognition of homologies to unify the apparent diversity of processes and phenomena as well as visualizations of new applications. He continues to indulge this passion energetically by engaging with the young at various levels from doctoral students to Summer Fellows and Inspire programmes.

His contributions to advancing scientific endeavours include design of modern Geophysics curricula, restructuring of NGRI research programmes, integrated design and writing of CBSE VIII and X class Science books, design and implementation of Marine Satellite and Ocean Information Services, modern Antarctic Research (1989-92) as Secretary to the Government of India, and founding of a Science to People programme in Hyderabad (1984) which matured into a vibrant state-wide movement. Currently, he is deeply engaged with active scientists in the field of Hydrological sciences in the design and review of research programmes aimed at rigorous characterization and modelling of critical watersheds in important river basins of the country and providing quantitative guides to water management decisions such as the quantum of necessary environmental flows.

Professor Gaur is a Fellow of the Indian National Science Academy (INSA), the Indian Academy of Sciences (IAS) and the Third World Academy of Sciences (TWAS). His awards include the Bhatnagar Prize (1980), the Flinn Award of the American Geophysical Union (2000), the Saha Birth Centenary Award of the Indian Science Congress (2006), and INSA Lecture Awards: the GP Chatterji Memorial Lecture (1991) the D N Wadia Medal Lecture (2007), and the Ministry of Earth Science, Lifetime Achievement Award (2014). He has also been conferred Doctor of Science Degrees (Honoris Causa) by the Banaras Hindu University, the Andhra University at Waltair and the Jawahar Lal Nehru Technical University at Hyderabad.