

Krishnan Memorial Lectures

S.No.	Name of Lecturer	Year	Title of Lecture
1.	Prof. K. R. Ramanathan	1965	The Life of Prof. K.S.Krishnan
2.	Prof. Fredrick Seitz	1966	Evolution of the Government-Science Relationship in the United States
3.	Prof. S. Bhagavantam	1967	Magnetic Effects in Crystals
4.	Prof. D.S. Kothari	1968	Nuclear Explosions
5.	Prof. Kathleen Lonsdale FRS	1969	Geometrical Changes Occurring in the Structures of Single Crystals
6.	Prof. G. N. Ramachandran FRS	1970	Molecular Biophysics and Crystallography
7.	Prof. S. N. Bose FRS	1971	Development of Scientific Research in India
8.	Prof. A. Kastler NL	1972	Virtual Interaction Between Atoms and Electro-Magnetic Fields
9.	Prof. M.G.K. Menon FRS	1973	Physics Deep Underground
10.	Prof. F.C. Auluck	1974	Superfluidity and Superconductivity
11.	Prof. A.P. Vinogradov FRS	1975	The Metallic Phase of Planets and Meteorites
12.	Prof. A. Guinier	1976	The Role of Crystallography in Solid State Physics
13.	Prof. R. S. Krishnan	1977	Raman Effect - Discovery and After
14.	Prof. F.C. Frank FRS	1979	Interaction Between Scientific Disciplines - Can Study of Liquid Crystals Teach Anything of Importance for Geophysics
15.	Dr. Raja Ramanna	1982	Recent Advances in Nuclear Physics
16.	Dr. I. Prigogine NL	1983	Thermodynamic Aspects of BCLD Theory
17.	Prof. P.W. Anderson NL	1986	Puzzles and Surprises in Condensed Matter Physics
18.	Prof. D. Shoenberg FRS	1987	Sealing Wax and String
19.	Prof. A. Hewish NL	1988	Pulsar ERA
20.	Prof. S. Chandrasekhar, NL	1989	The Intellectual Achievement that the Principia is
21.	Prof. J.M. Thomas FRS	1990	The Genius of Michael Faraday
22.	Prof. C.H. Townes, NL	1991	What is Happening at the Centre of our Galaxy
23.	Prof. D. Kind	1992	Current Trends Towards National and International Metrology Systems
24.	Prof. N. F. Ramsey, NL	1993	Time and Physical Universe
25.	Prof. Govind Swarup, FRS	1995	Large Scale Structure of the Universe
26.	Prof. P.G. de. Gennes NL	1996	Rice to Snow: The Description of Granular Materials
27.	Dr. P. J. Crutzen, NL	1997	30 Years of Progress in Atmospheric Chemistry
28.	Prof. Dr. R.L. Mossbauer NL	1998	Neutrino Physics at Nuclear Energies
29.	Dr. Kota Harinarayana	2004	Towards Development of Complex Systems - Issues& Challenges
30.	Dr. Hideki Shirakawa, NL	2005	Discovery of a Conducting Polymer – Polyacetylene – Fortuity and Inevitability
31.	Prof. C. N. R. Rao, FRS	2006	Transition Metal Oxides – Some New Directions
32.	Dr A. P. J. Abdul Kalam	2008	Multi-dimensions of Science

XXXIII Krishnan Memorial Lecture



Professor Klaus von Klitzing
Nobel Laureate-1985
(Max-Planck-Institut, Stuttgart)

on

“News from quantum effects in two-dimensional systems”

December 20, 2010

Venue :

Auditorium
National Physical Laboratory,
New Delhi -110012

Brief Biography of Sir K.S. Krishnan



Prof. Krishnan came to prominence as the collaborator of Raman when Raman's efforts over seven years, to discover molecular scattering accompanied by changes in wavelength, now called Raman Effect succeeded. Raman, praising the contribution wrote "If the Nobel award for physics made in 1930 was for the work done in the year 1928 alone instead of the entire work on scattering of light done at Calcutta from 1921 onwards Krishnan could justly have come in for the share of the prize". The Nobel citation reads ""for work on the scattering of light and for the discovery of the effect named after him".

Not one to relax on the strength of his role in the discovery of Raman effect, Krishnan turned towards magnetic properties of molecular crystals and graphite. Many in this audience remember the Krishnan memorial lecture by Prof. Shoenberg twenty years ago which he titled "sealing wax and string" to highlight the ingenuity and experimental skill with which Krishnan teased out small quantitative changes and correlated them with changes in molecular orientation and structure. This, well before the development of magnetic resonance Fourier transform infrared spectroscopy and tunnelling microscope.

The first and foremost Indian scientist to investigate quantum approaches in condensed matter phenomena, Krishnan excelled as a theoretician, and his work with Bhatia on the resistivity of metals, alloys and liquid metals presaged the modern Green's function approaches by more than two decades. Rare among famous Indian scientists was his continued passion for high quality physics to the very end. He published several papers in the prestigious journal Nature, while administering this laboratory as a director, on the experimental and theoretical investigations of work function of metals and energy and temperature distributions of heated solids.

It is only appropriate that the most famous memorial to this prince of Indian science is a lecture by prominent scientists who share his passion for science and dissemination of knowledge

News from quantum effects in two-dimensional systems

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Abstract

25 years after the Nobel Prize in Physics for the quantum Hall effect, the Nobel Prize 2010 for graphene throw light again on the fascinating physics of two-dimensional electron systems with interesting quantum phenomena.

The talk will concentrate on modern topics of two-dimensional electron systems in strong magnetic fields including discussions about applications of the quantum Hall effect in metrology and new experiments on mono- and double layers of two-dimensional systems.

Brief Bio-Data

Since 1985 Klaus von Klitzing is director at the Max Planck Institute for Solid State Research and honorary Professor at the University of Stuttgart, Germany.

He received his PhD from the University of Würzburg in 1972 and became a Professor at the Technical University Munich in 1980.

Klaus von Klitzing was awarded the Nobel Prize in Physics in 1985 for the discovery of the Quantum Hall Effect which plays a major role in metrology, not only as a resistance standard but also in connection with the discussion of a new SI system based on fundamental constants. His present research activities concentrate on quantum transport in low dimensional electronic systems with a focus on correlation phenomena in nano-devices.