Physical Research Laboratory, Ahmedabad

COLLOQUIUM - 13 - 04

Speaker: Professor Girijesh Kumar Mehta
Hon. Eminent Scientist, Inter University Accelerator Centre, New Delhi.

Title: Charge Particle Nanotechnology [CHARPAN] - The New Frontier

Abstract

Nuclear accelerators provided the breakthrough to Si industry by introducing ionimplanters, and are providing ways to reduce the size of the transistor to nm range. Nano ion beams are opening new horizons in the nano-scale world and leading the industry towards futuristic technologies through Charge Particle Nanotechnology [CHARPAN]. The Proton Induced X-Ray Emission [PIXE] technique for Trace Element Analysis used in many disciplines is now being used for medical studies in human cells. Material is modified by ion-matter interaction. We can control the modification to the extent that either we change its property to the level we want or to the extent that we can destroy the material as done in ion- therapy to cure cancer. Ions of controlled energies and sizes are now opening up new horizon. It is possible to fabricate nanostructures by drilling/cutting with nano size ions or use bottom up approach by depositing nanosize particles. It is demonstrated that with ions we can make material with negative refractive index, make glass which can transmit light but not heat and other smart/intelligent materials.

The Speaker

Professor Girijesh Kumar Mehta obtained his doctoral degree at the University of Columbia, USA and carried out postdoctoral research at the Brookhaven National Laboratory, USA. He joined IIT Kanpur in 1964 and established the 2 MV Van de Graaff accelerator laboratory. In 1984 he became the joint director of Nuclear Science Center, New Delhi (now Inter University Accelerator Center) and served as the director during 1988 - 2001. He served as the Vice Chancellor of University of Allahabad from 2001- 2004. In recognition of the success of IUAC as a nodal, community centre for Accelerator Physics, Prof. Mehta has received several awards including Excellence Corporate Award of the National Institute of Engineers; the Homi Bhabha Award for research in Applied Sciences and, the M. Chugani award for Experimental Physics of the Indian Physics Association. His current interests are in the use of accelerators and ion beams for nano scale materials and other applications. He has co-authored two books on Modern Physics and on Electronics for Scientists and Engineers. He is a fellow of the National Academy of Sciences and is a member of numerous advisory committees of the UGC and the MHRD.

Wednesday: 23 January, 2013, 16:00 hrs.

K.R. Ramanathan Auditorium, PRL

Tea at 15:30 hrs

ALL ARE WELCOME

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A YEAR OF NEW SCIENCE, NEW DISCOVERIES and DEEPER SOCIETAL COMMITMENT