



Physical Research Laboratory, Ahmedabad

COLLOQUIUM - 13 - 05

Speaker: Prof. Milan K. Sanyal

Director, Saha Institute of Nuclear Physics, Kolkata, India.

Title: Low-dimensional Physics and Ordering in Nano-structured Materials

Abstract

Fascinating physical properties evolve in materials when it gets confined in any of the three physical directions. Ordering of materials and associated structures of electrons and spins can now be probed with desired accuracy to test theoretically predicted properties of one- and two- dimensional physics. We shall discuss here results of a series of synchrotron x-ray, neutron scattering and electronic transport property studies of nano-structured materials to understand these ordering processes. In particular we shall discuss long range ordering and crystallization of CuS during formation at Toluene-water interface and reversible crystallization of monolayer of Polyhedral Oligomeric Silsesquioxane (POSS) on bare water surface. We shall also discuss spin-ordering in two dimensional systems with vortex formation and electron ordering in one-dimensional nanowires that give rise to novel resistance-switching transition properties.

The Speaker

Prof. Milan K Sanyal did his BSc (Physics Hons) from University of Kalyani and then joined Bhabha Atomic Research Centre (BARC) as Scientific Officer through its Training School in 1976. He obtained his MSc and PhD degrees from University of Bombay. He did his postdoctoral research in Physics Department of Brookhaven National Laboratory before joining Saha Institute of Nuclear Physics (SINP) in 1995. Prof. Sanyal's research interest are Structure-property correlation in low-dimensional systems, Scattering study of structural/magnetic correlation, Structure and morphology of solid and liquid interfaces and Charge ordering and electronic transport in nano-structured materials. Prof. Sanyal is a Member of several national committees in Nanoscience and synchrotron sources, India-Japan Science Council and Asia-Pacific Academy of Materials. Prof. Sanyal is a fellow of Indian National Science Academy, Indian Academy Sciences, The National Academy of Sciences, India, Asia-Pacific Academy of Materials and West Bengal Academy of Science and Technology, India. He has also received several awards including N.S. Satyamurthy Award, DAE Raja Ramanna Award and J.C. Bose fellowship.

Wednesday: 30 January, 2013, 16:00 hrs.

K.R. Ramanathan Auditorium, PRL

Tea at 15:30 hrs

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