Frontiers in Physical Sciences

T W I N S E M I N A R S

B. M. Anand Auditorium, Department of Physics, Panjab University

22 July 2015, Wednesday at 10.30 A.M.

FASCINATING WORLD OF DRIVEN SOFT AND GRANULAR MATTER

Prof. Ajay K. Sood FRS

IISc, Bengaluru

Prof. Ajay Kumar Sood, FRS is an Indian physicist known for his pioneering research findings on Graphene and Nanotechnology. Recipient of Shanti Swarup Bhatnagar Prize in 1990, Prof. Sood is Fellow of the World Academy of Sciences, the Indian Academy of Sciences, the Indian National Science Academy, and the National Academy of Sciences, India. He was bestowed Padma Shri in 2013 for his contributions to the fields of Science and Technology. Recently, Prof. Ajay K. Sood was elected as a Fellow of The Royal Society.

An Alumini of Panjab University, he joined IGCAR, Kalpakam as scientist, and worked for his Ph.D from IISc. He joined IISc in 1988 and rose to the position of the Chairman of the Division of Physical and Mathematical Sciences, IISc, which he held until 2008.

Recent years have seen unprecedented excitement, both in experiments and theory, in the arena of soft and granular matter under various driving fields. These studies provide new paradigm in Non-equilibrium Physics, cutting across different disciplines like Physics, Biology and Chemical engineering. In his talk, Prof. Sood will cover some of his group's ongoing experiments. He will discuss the approach of a physicist, to understand the beautiful phenomenon of self-organization in nature, in the laboratory by working with inanimate polar granular objects made active by placing them on rapidly vibrating surface amongst spherical beads. He will describe recent work on colloids under electric field and sheared matter

DESIGN OF NANOSTRUCTURES FOR ENERGY AND ENVIRONMENTAL APPLICATIONS

Prof. A. K. Ganguli FRSC, London

Director, INST, Mohali

Prof. Ashok Kumar Ganguli, FRSC (London), is the founding Director of Institute of Nano Science and Technology, Mohali. He obtained Ph.D from IISc, Bangalore. He joined Indian Institute of Technology (IIT) Delhi in 1995 where he continues to be a Professor of Chemistry. Prof. Ganguli is decorated with many awards and prizes such as CNR Rao National Prize and National Award of Nano Science and Nanotechnology. He is a fellow of Indian Academy of Sciences and the National Academy of Sciences, India. Recently, Prof. Ganguli became Fellow of the Royal Society of Chemistry, London.

Prof. Ganguli's areas of interest are in the design of nanostructured materials towards photocatalysis, water purification, oxygen and hydrogen evolution, microfluidic devices for in situ catalysis and diagnostics. The control of shape and size of nanostructures using microemulsions and related methods is a central theme of research in his group wherein the mechanism of nanorod formation has become a pivotal theme. The evolution of this reverse micellar nanoparticle system from its initial to final nanoparticle formation is very heterogenous which involves variety of intermediate stages. The nanostructures have been chosen for applications in water splitting, photocatalysis and photovoltaics. Metallic/alloy and metal oxide nanoparticles have been designed to show very efficient electro-catalysis for hydrogen and oxygen generation. His group has also been working on control of organic pollutants through photocatalysis using semiconductor heterostructures including 1-D core-shell nanostructures.