



PONDICHERRY UNIVERSITY
School of Physical, Chemical & Applied Sciences
Department of Physics
Invited Lectures on

Lecture 1:

Fluctuations and large deviations in non equilibrium systems

SanjibSabhapandit

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Date: 26th February 2014.

Time: 2.30 PM – 3:30 PM

Venue: Raman seminar Hall, Dept. of Physics.

Lecture 2:

Designing Materials for Device applications

Dr. Sunkara V Manorama Senior Principal Scientist, Nanomaterials Laboratory,
Inorganic & Physical Chemistry Division, CSIR-Indian Institute of Chemical Technology,
Hyderabad - 500 007, Andhra Pradesh, India, E-mail: manorama@iict.res.in;
manorama.s.v@gmail.com

Date: 26th February 2014.

Time: 3.45 PM - 4:45 PM

Venue: Raman seminar Hall, Dept. of Physics.

All are invited
Head of the Department of Physics

Lecture1:

Fluctuations and large deviations in nonequilibrium systems

SanjibSabhapandit

Raman Research Institute, C.V. Raman Avenue, Bangalore, India

Among the most interesting recent developments in the theory of nonequilibrium processes are so-called fluctuation theorems. These theorems make quantitative statements on the probability of negative entropy production in nonequilibrium systems. I will start with fluctuation theorems and its connections to large deviations. I will then describe how the large deviation function can be evaluated for the heat flow across a harmonic chain. Finally, I will show application of the results to an recent experiment.

Lecture2:

Designing Materials for Device applications

Dr. Sunkara V Manorama

Senior Principal Scientist,

*Nanomaterials Laboratory, Inorganic & Physical Chemistry Division,
CSIR-Indian Institute of Chemical Technology, Hyderabad, India*

Since historical times, the development of new synthesis procedures for the design and fabrication of nanoscale materials with controlled shape and size has been an exciting field. Significant advances have been made towards this end, followed by an understanding of the basic principles underlying the methods to obtain materials with desired properties and subsequently fine tuning and tailoring the procedures to obtain the required product with desired morphology. The selected approach would also be modulated appropriately to meet the requirements of energy conservation and stipulated green technology principles with the expediency of up-scaling. Adopting these practices centre around economic viability and meeting the industrial demand which practically would lead to simpler techniques and versatility to be routinely adopted for similar materials leading to generic procedures. Synthesis of material for a selected application entails imparting the necessary characteristics resulting in materials with the desired properties.

The talk would present some of the recent methodologies being pursued in the nanomaterialslaboratory at CSIR-IICT, Hyderabad to realize smart functional materials with special emphasis on highlighting the requirement for materials suitable for applications in devices like solar cells, photocatalysis and chemical sensing.