

Seminars: 2008-09

This year was an eventful year with many distinguished visitors from all fields of science coming and sharing their enthusiasm and work with us. We also had many informal interaction sessions with the scientists who visited for a short while. Here we share a few glimpses of the colloquia we had:

Molecular machines in Biology: Dr. M.K. Matthew from NCBS, Banaglore talked about the ultimate source of energy for all life, the ATPase machine. He combined the physics, chemistry and the biology of it all in a delightful manner fitting for the first colloquium.

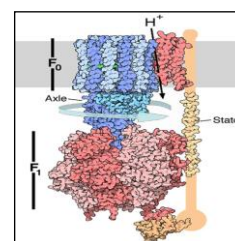


Fig 1

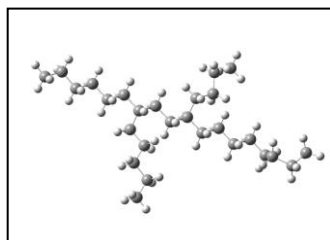


Fig 2

Plastics: The most indispensable substance invented by man, plastic. The many facets of plastics and polymers in general were discussed in this talk given by Dr. Ramakrishnan from IISc. The many advantages of plastics in comparison to most conventional materials in terms of their strength, versatility, usage were particularly highlighted, including many of the emergent properties in polymers.

Holographic Data Storage & Holographic Photonic Structures: An eye-opener into the upcoming and cutting-edge technology of large volume data storage, Dr. Joby Joseph from IIT-Delhi showed what it meant to put basic research to work. The promise of having terabyte capacities and Gb-order transfer rates, all based on holographic storage cards. The principles behind their production, including a real prototype model was shown to us by him.

Dark Energy - The Challenge of the Millennium:

Starting with the origin of the universe and its vast expanse, Prof. T. Padmanabhan talked about dark energy and the evidence for its existence. During the span of the talk, various other issues like entropy, micro-structure and problems with current theories of the universe were also touched upon.

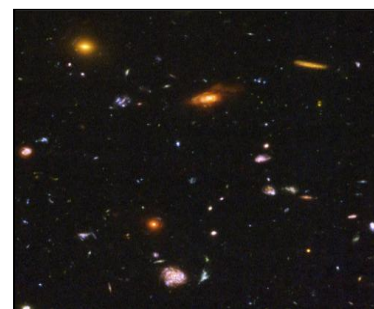


Fig 3



Fig 4

Solar Energy-Beyond the Hype: A multi-faceted exploration by Dr. Prashant V. Kamat into the many social and technological aspects of the current global energy-crisis placed within the context of global warming. The new upcoming ways of utilizing solar energy, their advantages, the physical and economic barriers holding the technologies from wider usage were all discussed.

The Strange Quantum World!: An introductory talk detailing many of the surprising phenomena characteristic of the quantum world. Using many attention-grabbing animations, Dr. H.R. Krishnamurthy led us through many qualitative explanations without the usual armada of complicated math which generally comes along with it.

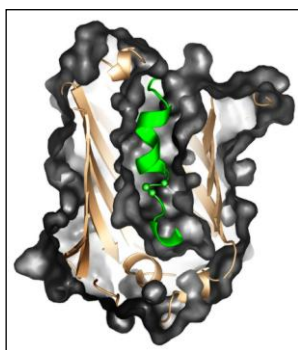


Fig 5

Protein Synthesis-Mechanisms: Given on International Science day, the talk was a detailed exposition by Dr. Umesh Varshney on the cellular mechanisms of protein synthesis, the many participating molecules, and the intricacies of the molecular structures involved; including the current picture of transcriptional research.

Climate Change - The Scientific Basis: Exploring the myth that global warming is a mass-scare by the scientific community or parties with vested interests, R. Rajesh corroborated the evidence for the ongoing global atmospheric feedback cycles, the predictions, the eventual and experienced consequences were all discussed. Most importantly, there was also a mention of the direct consequences for the Indian sub-continent.



Fig 6

Electron-Transfer in Molecular Functional Materials: Starting with a short introduction to non-linear optical properties of materials and their potential applications, Dr. Anna Painelli went on to talk about her models for acceptor-donor dye-chromophores in solutions and their various types. The experimental findings and spectroscopic results in agreement with their model were also discussed.

An Overview to bees: Beginning with a short introduction into the rich social life of the social bees, Dr. Hema Somanathan went on to talk about her area of research concerning solitary nocturnal bees in the Western Ghats and discussed how their nocturnality had given rise to a unique eye structure. The on-field experiments carried out to understand their perception and behavioural ecology were also talked about.



Fig7

Sources:

Fig 1: <http://www.flickr.com/photos/ethanhein/2756673171/>

Fig 2: Courtesy Vidya, PhD

Fig 3: <http://www.flickr.com/photos/rmforall/3103431641/>

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Fig 5: <http://www.flickr.com/photos/viknanda/403371973/>

Fig 6: Adapted from the presentation given by Dr. R. Rajesh

Fig 7: Courtesy Dr. Hema Somanathan