



OPTICAL TWEEZERS AND NANOSCALE BIOLOGICAL MACHINES

Micron-sized dielectric particles can be trapped and manipulated in a highly focused Laser beam. This "Optical tweezer" is a microscopic version of the tweezer that you would use to place an electronic chip delicately on a printed circuit board. It is also a tool of choice to measure the tiny pico-Newton forces generated by biological Nano-machines that power almost all living processes. Prof Roop Mallik will discuss the physics behind optical tweezers and the classic experiments that measure force from a single Nano machine in test-tube conditions. Such experiments, unfortunately, reveal little about how these machines are used in Nature. Recognizing this shortcoming, his Lab has developed methods to use optical tweezers inside living biological cells. The goal is to understand how large cooperative forces are generated by molecular machines during essential biological processes such as killing bacteria or distributing fat in the body. Prof Mallik will discuss how these experiments help understand Biology in the language of Physics and Engineering.

Institute auditorium, Academic block, IIT Palakkad

Thursday 2nd May 2019 | 4.00 pm

Tea will be served before the lecture



Professor Roop Mallik

**Professor, Department of Biological Sciences,
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Infosys Prize Laureate**