

ELECTRICAL & COMPUTER ENGINEERING SEMINAR

“Optical Tracking of Molecular Processes at High Resolution with a Novel Traveling Wave Technique”

by

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Abstract

In order to understand the basic mechanisms of living cells, it is essential to elucidate the complexity of fundamental interactions and dynamical processes between their underlying molecular building blocks, such as DNA, RNA, and proteins. High resolution, non invasive, optical methods are outstanding tools that can provide us with unique insights into such sophisticated molecular machineries.

In this talk I will present a new optical experimental technique which is highly sensitive and minimally invasive that allows, in particular, study of real time dynamics of molecular motors in the single molecule limit. These dynamical processes are essential to many cell functions, such as intracellular transport, cell division, growth, and locomotion. The extremely high temporal (~10 microsecond) and spatial (subnanometer) resolutions provided by the new method may be key to studying various interactions and dynamical mechanisms of molecular motors. I will describe the basic physical principles of the technique, and will discuss preliminary results from several systems, whose detailed study is currently underway.

Please contact Prof. Carmen Menoni, carmen.menoni@colostate.edu, with any questions.