

The Electronic Instrumentation Laboratory is proud to present its **tenth**

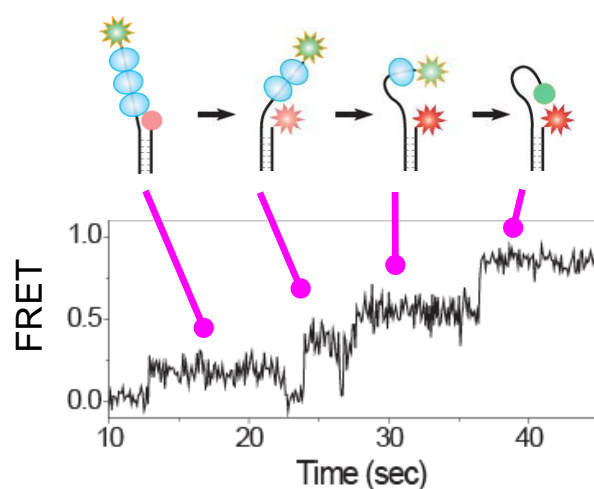
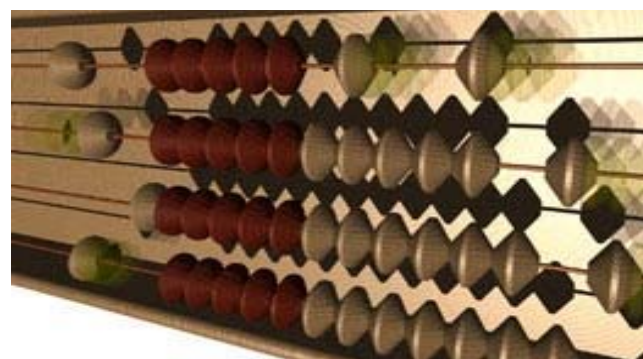


EI Colloquium

Chirlmin Joo: Single-Molecule Spectroscopy

Since its first demonstration in the early 1990's, single-molecule spectroscopy has become an indispensable tool of molecular biology. In this talk, we will explore the dynamic nature of DNA by stretching, pulling, and twisting DNA strands with single molecule force spectroscopy. We will further learn its ever-fluctuating nature with single molecule fluorescence spectroscopy.

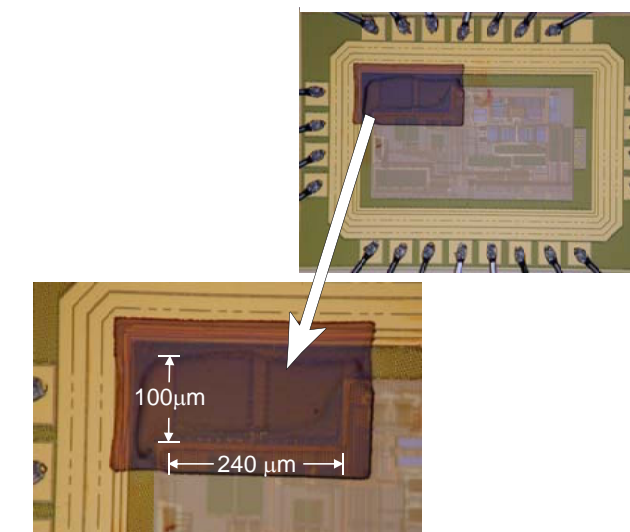
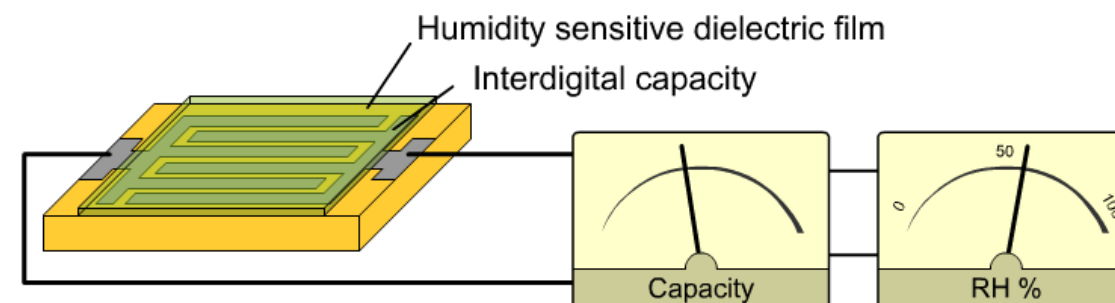
In the second part of my talk, I will present my single molecule fluorescence work on RecA proteins. RecA and its homologs help maintain genomic integrity through recombination. Using single-molecule fluorescence assays and hidden Markov modeling, we show the most direct evidence that about five monomers are sufficient for filament nucleation and a RecA filament grows and shrinks primarily one monomer at a time and only at the extremities. Both ends grow and shrink, contrary to expectation, but a higher binding rate at one end is responsible for directional filament growth. We further investigate how DNA sequences affect the kinetics of the filament nucleation and the monomer dynamics at the ends of a filament.



Zhichao Tan: A Smart Humidity Sensor for RFID Sensing Applications

Adding sensing functionality to RFID tags opens up many new applications, such as tracking and monitoring of perishable products throughout the logistics chain. RFID tags equipped with sensors can provide valuable information about the transportation and storage conditions of such products (including the temperature, CO₂, pH, relative humidity etc.), which can be used to better predict shelf life and thus significantly reduce the waste caused by spoilage. Such a solution, however, is only economically viable if the sensors and the associated electronics can be produced in a low-cost mass-production technology. Moreover, they should be able to operate at the very low current and energy levels, since only a small amount of energy is available in RFID tags

In the talk, the motivation and concept of RFID sensor platform will be addressed. Furthermore, the challenges associate with design low cost and low power sensors are presented. Finally, the design of CMOS fully integrated ultra-low energy humidity sensor which fit with RFID sensing requirement will be demonstrated..



Location:
Lecture Hall C

Date & Time:
Monday July 4th, 16:00 - 17:00

Afterwards:
Drinks & Pizza!