The Electrical and Computer Engineering Program presents
ECEN Seminar Series

Nanotexture Tricks in Microfluidics and Lab-on-Chip to Emulate Living Systems for Early Cancer Diagnostics

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Monday, 11th May, 12 – 1 PM
Lecture Hall 144
Light lunch will be served

Tumor cells exhibit very specific biophysical properties that can be used to distinguish them from the healthy cells. These are much softer, adherent and depict a very “active lifestyle” when compared to their normal counterparts. These mechanical properties can be used as inherent markers for tagless diagnosis of cancer cells. The malignant tumor cells also pass through hard layer of basement membrane. Solid-state materials with nanotextured features can mimic the basement membrane environment and provide mechanical strength to transduce cell’s properties into electrical signals. The subcellular world is becoming much relevant now with the advent of MEMS and Nanotechnology. Our lab has been working on designing nanotechnology-based approaches to engineer microdevice surfaces that utilize cell-surface interactions for highly sensitive isolation and capture of tumor cells.

This talk will present a number of nanotechnology based detection systems that utilize solid-state devices to exploit inherent physical and chemical properties for identification of cancer cells. The rapid and label-free tumor cell detection is achieved from robust and repeatable surface functionalization. The capability to sense and recognize the cells when they are very few in numbers makes these approaches suitable for diagnosis of cancer at earlier stages. These diagnostic frameworks can be extended to other investigations where cell’s viscoelastic behavior can be used for diagnosis.

FOR MORE INFORMATION:
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