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ECpE DISTINGUISHED LECTURE SERIES

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SAMIR IQBAL

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"Nanoscale Device Approaches for Cancer Screening"

Abstract: Cancer is one of the leading causes of death around the world. Early diagnosis of the disease results in better prognosis and reduced mortality rates. One way of cancer screening and early diagnosis is to detect circulating tumor cells (CTCs). CTCs are the primary tumor cells that enter into the peripheral bloodstream and settle in other organs creating secondary tumors. Their detection can also help in prognosis monitoring, heterogeneity analysis and to define personalized therapy. CTCs are, however, very rare in blood at the onset of disease and thus hard to isolate. This

talk will highlight some nanotechnology-based approaches that have resulted in innovative physical systems for single-cell analysis that use or mimic biological interactions, and emulate physiological conditions. Such engineered single-cell analysis approaches have given new insights about tumors, metastasis and can be important to tackle early cancer detection challenges. Rapid and label-free capturing of diseased cells with robust surface functionalizations has opened new research areas focused on cancer behavior study. An overview of the detection, sorting and isolation of rare cells with nanotechnologies and microfluidics will be provided.

Bio: Samir Iqbal is an Associate Professor at the University of Texas at Arlington. His work focuses on the applications of solid-state devices for biomedical sensing, understanding interactions at the nano-bio interfaces, and development of cancer screening devices with high sensitivity and selectivity. He is a Fellow of the Royal Society of Chemistry and a senior member of the IEEE. He serves as a Distinguished Lecturer for IEEE-Engineering in Medicine and Biology Society (EMBS) and is on the EMBS Technical Committee on BioMEMS. He is also member of American Physical Society, American Society of Mechanical Engineers, Biomedical Engineering Society, Biophysical Society, American Society of Mechanical Engineers, European Society for Nanomedicine, and Sigma Xi, to name a few. He was a recipient of National Science Foundation CAREER award in 2009.



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