

*The Electrical and Computer Engineering Program presents  
ECEN Seminar Series*

# Biologically Inspired Microscale Systems with Nanotextured Interfaces

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12 – 1 PM**

**Lecture Hall 143**

*Light lunch will be served*

A number of bio-inspired schemes have emerged that utilize solid-state micromachining to interface cells and to detect molecular biomarkers. The approaches provide rapid and label-free identification, and selective capture of diseased cells. The need to sense and recognize the cells when these are very few in numbers requires nanotextured surface features that mimic biological conditions. These biologically inspired manufacturing frameworks can be extended to other investigations, especially where viscoelastic, mechanical and chemical behaviors can be used combinatorically to faithfully transduce important molecular and cellular events to meaningful signals.

Characterizations of nanoscale interactions are traditionally done with electrical signals or imaging (dyes, bright field, electrons, scanning probe). However, structural changes in biomolecules and cells can also be employed to get much higher sensitivity. In addition, the interplay of sensitivity and selectivity is also important factor in the context of precise cell enumeration, differentiating phenotypic characteristics and viability analysis. This talk will cover these topics and will be of significant importance to the general audience as well as to those interested in understanding physics of bio-nano interfaces.



Dr. Iqbal received his Bachelor's in Electrical Engineering from NED University of Engineering and Technology, Karachi, Pakistan. He then earned his doctorate from Purdue University in 2007. After joining the University of Texas at Arlington (UT-Arlington), he established Nano-Bio Lab. His work focuses on enhancing sensitivity and selectivity of solid-state sensors, developing novel nano-bio interfaces, and cancer screening devices.

Dr. Iqbal is a Fellow of the Royal Society of Chemistry and a senior member of 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. In 2011, he was chosen as Recognized Professor by Phi Kappa Phi. In 2013, Tau Beta Pi inducted him as Eminent Engineer and UT-Arlington selected him for Honorable Mention for Best Academic Advisor Award. In 2014, the College of Engineering at UT-Arlington nominated him for President's Award for Excellence in Teaching. He was awarded Sigma Xi Outstanding Faculty Mentor Award in 2014. In November 2014, he was inducted into National Academy of Innovators by UT-Arlington. Earlier in 2015, he was given the Best Research Mentor Award. In 2016, he has been awarded Research Excellence Award by his university.

## FOR MORE INFORMATION:

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