Joint IQSE AMO and Optica Seminar

Thursday, May 3rd, 11:30 CDT, ZOOM&IQSE seminar room (MPHY 578)

Pizza will be served for IQSE members at 11:00. The talk will start around 11:30

Frances S. Ligler, D.Phil., D.Sc.

Distinguished Professor of Atmospheric Science

College of Engineering, Colorado State University

A view of early Earth observing satellite technology and science

An optical biosensor includes a recognition molecule or molecular complex that generates an optical signal upon target recognition and a portable optoelectronic device that measures the signal. Conventionally, the recognition molecule is immobilized on an optically active surface and generates a signal upon target binding. The explosion of nanoparticles and dyes for intracellular use confused the definition of what constitutes a biosensor. Many investigators referred to these sensing materials, especially those in nanoparticle form, as biosensors--even when the signal had to be evaluated using a laboratory microscope. The requirement for a portable system blurred. Then cell phone cameras and CMOS imagers replaced the big microscopes, and the readout systems once again became portable.

Looking at these changes from the perspective of decades of development of optical biosensors is intriguing. Instead of a requirement to add a sample to a biosensor, we can now add our recognition molecules to the sample and detect spectral changes using optics with imaging or spectrometry. Most importantly, the detector can be both portable and remote from the recognition molecules and direct contact with the sample is not required.

This geometric paradigm opens up an entire new range of measurements for optical biosensors. For the first time, we can envision continuous, long-term measurements in living cells, three-dimensional tissues, and even intact animals. We no longer need to extract, fix or terminate living organisms in order to perform functional measurements. Furthermore, imaging capabilities suggest that we can analyze larger areas, such as thousands of individual cells in complex arrangements, simultaneously, without reducing the data to “average values”. I will discuss how biosensors have evolved and the potential of newly configured systems.

ZOOM information:

https://tamu.zoom.us/j/99696662195?pwd=NlFUZFpvamR6YlIBUUZROFVReFhkQT09

Meeting ID: 996 9666 2195

Passcode: 757350

162.255.37.11 (US West) 162.255.36.11 (US East)

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