

FCoE-BITT Fall 2009 Seminar Series

Please join the **Florida Center of Excellence in Biomolecular Identification and Targeted Therapeutics (FCoE-BITT)** for two seminars by **Mark A. Poggi**, Ph.D, the North American Territory Manager for Q-Sense, Inc. Dr. Poggi's seminars will discuss the applications and operation of a Quartz Crystal Microbalance with Dissipation Monitoring (QSense) and a Surface Plasmon Resonance (SPR). These two types of analytic instruments are useful tools for materials characterization and determining molecular interactions in the areas of Biology, Chemistry, Physics, and Engineering. The FCoE-BITT Core Facility has the QSense E4 QCM-D instrument available for use in the Biotechnology Development and Testing Facility. The seminars will be held on Thursday, September 24, 2009, at 2 and 3 PM (seminar, and short talk/instrument demo) in IDRB room #302.

Please visit the FCoE-BITT website at <http://www.bitt.usf.edu>.

I. Quantifying Changes at Material Interfaces Using Dissipative Quartz Crystal Microbalance (QCM-D)

Thursday September 24th
2 pm in room IDR 302

New technologies are being developed to quantitatively measure the surface properties of material interfaces. One particular technique, Quartz Crystal Microbalance with Dissipation Monitoring (QCM-D), measures several dynamic properties of materials and biological molecules. Using QCM-D, changes in structural properties and mass can be simultaneously monitored in real-time in air or in liquid. This technique provides a more fundamental understanding of nano-scale material behavior. This presentation will begin with the fundamental aspects of this technique, followed by examples of current applications, such as quantifying self-assembly processes, studying structural changes in biological molecules, monitoring structural changes in materials, dynamically following changes in nano-scale systems, studying changes in cells at surfaces and many other interfacial problems.

Q-Sense develops and markets research instruments based on the patented Quartz Crystal Microbalance with Dissipation Monitoring (QCM-D) technology. Since 1999, QSense has become the leading supplier of acoustic resonator based instruments for molecular binding events taking place on various surfaces. Q-Sense instruments are found in over 25 countries world-wide and there are currently over 600 publications citing the use of the QCM-D technology.

II. Discussion and Demonstration of a versatile Surface Plasmon Resonance Technology (SPR) for Biological and Materials Science Research

Thursday September 24th

3 pm in room IDR 302

Surface Plasmon Resonance (SPR) is a common analytical technique that is used to study the binding kinetics of biological molecules. We have recently developed a SPR technology that is extremely useful for not only biochemists but also relevant for materials science research. We have developed an easy to use SPR platform that allows for the entire SPR curve to be monitored and the experimental platform provides flexibility. You have the ability to decide the surface chemistry that you'd like to probe. We will discuss our experimental platform and review some of the recent work that has been done utilizing this technology. Following the presentation there will be a demonstration of an experiment on one of our SPR systems.

KSV is the leading manufacturer of instruments for characterization of nano-scale films and study of surface molecular interactions, as well as ultra-thin film deposition. With over 20 years experience of developing instruments to measure contact angle, dynamic contact angle, surface tension and interfacial tension, monolayer properties, adsorption processes and much more provide you can feel secure about your new instrument. KSV is also the pioneer of nano-scale film deposition and has become the world's largest manufacturer of Langmuir and Langmuir-Blodgett troughs as well as unique highly surface specific analytical instruments. Included product lines are instruments like, interfacial shear rheometer (ISR), reflection FT-IR with polarisation modulation (PMIRRAS), and Brewster Angle Microscopes (BAM).

The University of South Florida is one of the nation's top 63 public research universities and one of only 25 public research universities nationwide with very high research activity that is designated as community engaged by the Carnegie Foundation for the Advancement of Teaching. USF was awarded \$380.4 million in research contracts and grants in FY 2008/2009. The university offers 232 degree programs at the undergraduate, graduate, specialist and doctoral levels, including the doctor of medicine. The USF System has a \$1.8 billion annual budget, an annual economic impact of \$3.2 billion, and serves more than 47,000 students on institutions/campuses in Tampa, St. Petersburg, Sarasota-Manatee and Lakeland. USF is a member of the Big East Athletic Conference.

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