

Food for the Twenty-First Century  
Bioprocessing and Biosensing Center

# Fall 2009 Seminar Series

**PRESENTER:** Dr. Shubhra Gangopadhyay, Lapierre Chair Professor  
University of Missouri, Electrical and Computer Engineering

**TITLE:** Nanoscale Self Assembly and Its Applications in Sensing  
and Drug Delivery

**ABSTRACT:**

We are currently working on novel approaches for assembling fuel and oxidizer nanocomposites, which are used to develop microdevices for generating localized shock waves utilizing semiconductor chip processing technology. The micro- shock wave generator is utilized to deliver different materials into single cells or tissue with extremely high precision without damaging cells/tissues. We are also preparing biocompatible nanoparticles that will permit the clustering of high doses of medical compounds, fluorescent dyes, plasmids, etc into a small compartment. The tunable and user-friendly system will bring fundamental changes to the study and understanding of biological processes, as well as enable novel diagnostics and interventions for treating diseases.

**BIOGRAPHICAL:**

Dr. Shubhra Gangopadhyay joined the University of Missouri-Columbia (MU) in 2003 as the LaPierre Chair Professor of Electrical and Computer Engineering to enhance interdisciplinary research in the areas of microelectronics/nanoelectronics, material science and nano/biotechnology. Dr. Gangopadhyay obtained her Ph.D. degree in physics in 1982 from Indian Institute of Technology at Kharagpur. Before assuming the position at MU, she was a professor of physics at Texas Tech University for eighteen years. She conducted research in the area of micro/nanoelectronics, chemical and biological sensors and material science. She became a Fellow of American Physical Society in 2003. At MU, Dr. Gangopadhyay is the Co-Director of the International Center for Nano/Micro Systems and Nanotechnology.

**DATE • TIME • LOCATION:**

September 1, 2009, 4:00 PM, 105 Agricultural Engineering Building

The Food for the 21st Century (F21C) program at the University of Missouri (MU) was established in the mid-1980's through state funding. The overall goal of the program is to help Missouri food producers and processors maintain their competitive edge in the global marketplace by conducting cutting-edge research in a number of food-related areas. The program involves faculty researchers from multiple colleges including College of Agriculture, Food and Natural Resources; College of Arts and Sciences; College of Engineering; School of Medicine; College of Human Environmental Sciences; and College of Veterinary Medicine. Based on the research emphases, the researchers are grouped into four Clusters: Plant Biotechnology; Animal Reproduction; Bioprocessing and Biosensing Center; and Human Nutrition.

Bioprocessing and Biosensing Center was formed in 1986. The Center currently consists of 27 faculty members, plus collaborators, support staff, and graduate students from six departments in the College of Agriculture, Food and Natural Resources and College of Engineering. These departments include Biological Engineering; Food Science; Animal Sciences; Chemical Engineering; Electrical Engineering; and Mechanical and Aerospace Engineering. This seminar is one of the educational activities in the Bioprocessing and Biosensing Center.

**Cluster Co-Leaders:** Drs. Fu-hung Hsieh and Jinglu Tan

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