

# WINTER 2005 SEMINAR SERIES

## F21C BIOPROCESSING & BIOSENSING CENTER

• DIVISION OF FOOD SYSTEMS & BIOENGINEERING •

### PRESENTER

**Dr. Kannan Raghuraman**, Research Assistant Professor,  
Department of Radiology, University of Missouri-Columbia

### TITLE

**Hybrid Nanoparticles in Sensor Design and Cancer  
Therapy**

### ABSTRACT

Recent years have witnessed a number of new advances in nanotechnology because of the technological importance of nanostructured materials. Indeed, the design and development of nanostructured materials with novel physical/chemical characteristics continues to emerge as one of the most exciting areas of science in the 21st century. The burgeoning interest in nano technology has paralleled the urgent need for biosensor devices that detect chemical and biological agents. The use of hybrid nanoparticles, composed of inorganic nanoparticles and biomolecules in the architecture of novel nanoscale biological sensors in disease detection represent another exciting and rapidly growing dimension in nanotechnology. Among various different types of metallic nanoparticles in current use in biosensor design, gold nanoparticles are the most intensely studied for nano technological applications because gold is capable of sustaining in the unoxidized form at the nanoscale while most other metals are oxidized at nanoscales to a depth of a thousand nanometers obliterating the nanoscale properties. The high target specificity of certain biomolecules toward various analytes and cancer cells combined with the unique optical and radiochemical properties of gold nanoparticles make "nanoparticle-biomolecule" conjugates attractive candidates for sensor design and cancer therapy. While important advances are being made in the production of gold nanoparticles, methodologies for hybrid gold nanoparticles are still in infancy. The lack of progress may be attributed to the unavailability of ideal conjugation strategies of gold nanoparticles with biovectors. Therefore, new methodologies that would lead to production of hybrid gold nanoparticles will provide important advances in detection and therapy of specific cancers.

This seminar will focus on the synthesis and possible applications of hybrid gold nanoparticles for potential use in sensor design and cancer therapy.

### DATE • TIME • LOCATION

**Tuesday, February 8, 4:00pm**  
**Ag Eng Bldg 105 • Refreshments**