

Date: October 25, 2007

Speaker: Dr. Mustafa Culha, Yeditepe University, Faculty of Engineering and Architecture, Department of Genetics and Bioengineering, 34755 Kayisdagi-Istanbul, Turkey

Title: Surface-Enhanced Raman Scattering for Investigation of Biological Structures.

Abstract: The development of novel sensing schemes capable of detecting target molecules or structures in complex biological systems such as living cells, sensitive and selective diagnostic tools for diseases, and novel materials with desired biocompatibility depends highly on the clear understanding of the interactions between living and nonliving structures. With the current available techniques, it is almost impossible to track the mode of interactions between complex biological structures and materials at molecular level. Surface-enhanced Raman scattering (SERS) is a vibrational spectroscopic technique with a number of unique properties such as finger printing, immunity to water, and high sensitivity, and provides significant chemical information about the molecule or molecular structure in the close vicinity of nanostructured noble metal surfaces such as gold and silver. Therefore, it allows us to investigate the interactions of colloidal gold and silver nanoparticles and surfaces with biomolecules and biological structures, and to develop novel sensing tools for complex biological organizations, diagnostic systems for diseases and biocompatible materials based on gold and silver nanostructures. This talk presents the research efforts in our group to utilize the SERS for investigation and characterization of biological structures in this context.