

CCST & CMET Seminar:

- › Tuesday, November 25, 2008
- › 11:00 A.M.
- › 366 Colburn Laboratory

Prof. Karl S. Booksh

UD Chemistry and Biochemistry

“Surface Plasmon Resonance Spectroscopy on an Optical Fiber: Various and Sundry Applications”

Surface Plasmon Resonance (SPR) spectroscopy, performed on the end of an optical fiber, enables in-situ observations of chemical processes. However, where SPR is intrinsically a sensor for local dielectric constant, in many cases chemo-specific coatings and receptors are needed to enhance selectivity and sensitivity. Our group is the first to develop a fiber optic SPR sensor where analysis is performed on the exposed core of a multimode optical fiber. Presented here will be the development and application of the sensor platform for vapor and aqueous phase sensing. Discussed include protein biomarkers in serum (ng/ml detection limits), salinity and dissolved organic matter near hydrothermal vents and in coastal water (ppm detection limits), glucose in urine (microgram/ml detection limits) and ammonia vapor (ppm detection limits). Also presented will be an integration of electronics and optics to enhance on a single CMOS detector designed to optimize the quantitative performance of multivariate spectroscopy methods.