Winter 2007 SEMINAR SERIES

F21C Bioprocessing & Biosensing Center

• DIVISION OF FOOD SYSTEMS & BIOENGINEERING •

PRESENTER: **Dr. Albert T. Rosenberger**
Professor, Department of Physics
Oklahoma State University, Stillwater, Oklahoma

TITLE: **Whispering-Gallery Chemical Microsensors**

ABSTRACT:

Whispering-gallery microresonators can be used for sensitive optical detection of atmospheric trace gases and chemicals in solution. For example, light traveling down a tapered optical fiber tangent to the equator of a sub-millimeter silica microsphere can couple into a whispering-gallery mode, where it propagates many thousands of times around the sphere by total internal reflection. The evanescent component of such a mode interacts with the molecules to be detected in the ambient or on the sphere's surface. I will discuss the sensors developed by my group, explain the advantages of our absorption detection scheme over others such as frequency-shift and cavity-ringdown, and illustrate novel applications such as sensitive detection of chemicals in a very strongly absorbing solvent and use in microfluidic liquid chromatography.

BIOGRAPHY:

Dr. Rosenberger received the BA degree in physics and mathematics from Whitman College, the MS in physics from the University of Chicago, and the PhD in physics from the University of Illinois (Urbana-Champaign). He did a postdoc with Jeff Kimble at the University of Texas at Austin, and has taught at several universities. For the last eleven years, he has been at Oklahoma State University, where he is now Professor of Physics. His research interests have ranged from super radiance through optical bistability and nonlinear dynamics to, most recently, microresonator optics.

DATE • TIME • LOCATION:

Tuesday, March 20, 4:00pm
Ag Eng Bldg 105 • Refreshments