

The Department of Mechanical Engineering presents:

Jennifer Barton, Ph.D.

University of Arizona
Professor and Head of Biomedical Engineering
Assistant Director of BIO5 Institute

Friday, June 3, 2011
11:10AM-12:00PM
Bourns Hall A265

Optical Imaging for the Study and Detection of Ovarian Cancer

Abstract:

Optical methods of investigating tissue have the advantages of high sensitivity, high resolution, relatively low cost, and ability to sense both structural and biochemical characteristics of tissue. The limited penetration depth of light can be partially offset by endoscopic delivery using small-diameter fiber optics. Optical techniques hold the promise of directing, minimizing, or perhaps even eliminating traditional destructive biopsy by providing diagnostic information in a harmless manner.

I will discuss three complimentary optical modalities: optical coherence tomography (OCT), fluorescence spectroscopy (FS), and multiphoton microscopy (MPM). OCT generates cross-sectional images of tissue microstructure, FS provides information about the concentration and distribution of fluorescent biomolecules, and MPM enables sub-micron-scale imaging of cells and tissue matrix. My group has developed instrumentation (particularly miniature endoscopes) and image analysis techniques for these modalities. While relevant to variety of medical conditions, I will discuss applications to ovarian cancer. We have performed both clinical and pre-clinical imaging of the ovary, with the goal of identifying early changes in the ovary that predict later development to ovarian cancer.

About the Speaker:

Jennifer Barton received the BS and MS degrees in electrical engineering from the University of Texas at Austin and University of California, Irvine, respectively. She worked for McDonnell Douglas on the Space Station program before returning to The University of Texas at Austin to obtain the Ph.D. in Biomedical Engineering in 1998. She is currently Professor of Biomedical Engineering, Electrical and Computer Engineering, and Optical Sciences at the University of Arizona. She is Head of the Department of Biomedical Engineering and Assistant Director of the BIO5 Institute, a collaborative biosciences institute. Her research interests include development and application of optical coherence imaging and fluorescence spectroscopy techniques, and laser-blood vessel interaction.

Refreshments Served 15 minutes in advance of Colloquium

**COLLOQUIUM
MECHANICAL ENGINEERING**