

# lunch for hungry minds

## Speaker:

Wan Y. Shih, PhD  
*Associate Professor*  
*School of Biomedical Engineering,  
Science, and Health Systems*  
Drexel University  
QED Program Awardee

*Presented by Dr. Nicholas Kefalides*

## Date:

Monday, June 28, 2010

## Time:

12:00 - 1:00pm  
*Complimentary lunch at 11:30*

## Location:

Fuller Conference Room  
3711 Market Street, Suite 800  
Philadelphia, PA 19104

## RSVP:

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# Detecting Breast Cancer using Piezoelectric Fingers

Mammography is the established standard for breast cancer screening in the U.S. and Europe although there are limitations to its utility: 1) it does not perform well in areas of the breast comprised of dense breast tissue; 2) it is an Xray procedure and is not recommended for younger women who may be at risk for breast cancer; 3) its proper use requires a specially trained radiology technician and a radiologist is needed for interpretation. In developing countries, the cost of the mammography unit and cost per test limits its adoption. Its use is further limited by the higher incidence of dense breasts in Asian women.

Dr. Shih is developing a non-invasive, radiation-free piezoelectric finger (PEF) device for breast cancer detection based on measurements of tissue elasticity. Breast tumor tissue is stiffer than normal breast tissue and this difference in elasticity can be measured by the PEF device along two axes - top down compression and lateral shear. While each of these measurements alone can yield useful information on breast tissue elasticity, integrating these two readings provides an especially sensitive reading of abnormal breast mass. The sensors can also identify masses that are typically too small for detection by other screening devices.

Using funding provided by Drexel's Wallace H. Coulter Foundation Translational Research Partnership Award and the Science Center's QED Program, Dr. Shih's team has designed and tested the sensors on excised breast tissue samples and built a working prototype. The working prototype will form the basis for production of a low-cost unit that can be introduced into developing countries or for use in the U.S. as an adjunct to mammography.

