



# Optical Coherence Tomography: imaging and sensing of tissues and cells

## Short Bio.

Kirill V. Larin is the Associate Professor of Biomedical Engineering at the University of Houston. He also holds joint appointments at the Department of Physiology and Biophysics at Baylor College of Medicine and Department of Optics and Biophysics at the Saratov State University (SSU) in Russia. His research contributions are in Biomedical Optics and Biophotonics and development and application of various optical methods for noninvasive and nondestructive imaging and diagnostics of tissues and cells. Larin has authored more than 60 peer-reviewed publications and chapters in four textbooks on Biomedical Optics. Larin currently serves as an Instructor for short courses on Tissue Optics for the OSA and SPIE.



**Kirill Larin**

Associate Professor  
Univ. of Houston, USA

## Date

**Friday, November 2<sup>nd</sup>, 2012**

## Time

**14:00-17:00**

## Location

**R304, Dept. of Physics / Center for Condensed Matter  
National Taiwan University**

## Abstract

In this short course I will overview recent advances in development and application of Optical Coherence Tomography (OCT) technique for structural and functional imaging and sensing of various transport and developmental processes as well as disease progression in tissues and cells. This course will start with basic description of light-tissue interaction including structural and optical models of tissues with single and multiple scattering. It will be shown that light reflection, transmission, scattering, and state of polarization can be effectively controlled by changes of tissue structure and the refractive index of tissue components. The principles of OCT imaging will be discussed followed by review of various applications in biology and medicine (such as imaging of ocular tissues, intravascular imaging, cancer diagnostics, assessing drug diffusion and optical clearing, sensing and quantifying of microbubbles and nanoparticles in tissues and blood, and imaging of early embryonic cardiovascular system development). Future developments and applications of OCT technology will also be discussed.

