



BIOENGINEERING SEMINAR

at 4:00 PM on March 18th, 2015 (Wednesday)
MMR, Department of Physics

High resolution Optical Coherence Tomography for optical biopsy and non-destructive testing

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Optical Coherence Tomography (OCT) has emerged as a new non-invasive modality for high resolution cross sectional imaging. Sharing the same approach with ultrasound imaging, OCT uses light instead of sound. Combined with fast scanning mechanism, OCT can acquire images of 10 billion volume points in less than a second at few microns resolution. The properties such as real time, non invasive, high resolution and safe have made OCT a preferred choice among clinicians for diagnosis of several kinds of diseases in ophthalmology, cardiology and cancer detection. In this talk, I will discuss about the basics of OCT and different types of OCT. A major part of the talk will be devoted to the work that I have done on OCT. In general I will talk about the application of OCT in eye imaging, intravascular imaging, cancer diagnosis and non-destructive testing of materials.

About the speaker:

Dr. Singh received his Ph.D. in Bioengineering from Institut national de la recherche scientifique (INRS), Canada and Master of Technology in Laser Science from Devi Ahilya University, Indore, India. Dr. Singh's research interests are focused on the development and clinical validation of non-invasive, high-resolution optical imaging methods for disease diagnosis. Presently he is developing next generation OCT technology, termed μ OCT, which has a resolution of 1 μ m and is capable of imaging cells and sub cellular structures in the coronary wall. He has also developed several other technologies, including ultra high field terahertz measurements based on spectral domain interferometry and laser assisted graft preparation for corneal transplantation. He was awarded the prestigious Innovation Challenge Award by Natural Sciences and Engineering Research Council of Canada (NSERC) for his innovative work on glaucoma.