Lakehead UNIVERSITY | Department of Physics

The Department of Physics invites you to attend thesis proposal presentations by:

PAVLO KARASYUK

"Characterization of Cadmium Zinc Telluride (CZT) Semiconductor for Applications in Advanced Computed Tomography"

Supervisor: Dr. A. Reznik

"Semiconductor-based direct conversion detectors revolutionized radiation medical imaging since they allowed diagnostic capabilities not achievable with other detector approaches. The areas of highest impact are x-ray Radiography and Nuclear Medicine. Semiconductor detectors are also of a great significance to the field of x-ray Computed Tomography (CT) as they promise significant increase in intrinsic energy and spatial resolutions needed for better energy and material resolved CT imaging. Cadmium zinc telluride (CZT) is a material of choice for direct conversion CT detectors. Recently, CZT has been successfully employed in gamma cameras operating in CT-relevant energy range. However, for use in CT, CZT has to demonstrate electronic properties that satisfy the requirement of high x-ray fluxes typical for CT; this includes prevention of possible buildup of space charge and related dynamic polarization of a detector material. Therefore, the overall objective of this project is to investigate transport of photo-generated charge carriers in CZT (i.e, electron and hole mobilities and their temperatures and field dependencies) and to evaluate the potential of CZT photoconductor to be used in advanced CT detectors."

JOSHUA TREVISANUTTO

"Tapered Fiber Probe Coated with Gold Nanostructure"

Supervisor: Dr. G. Das / Co-supervisor: Dr. A. Linhananta

"Recent advancements in nanotechnology have attracted worldwide attention. The potential applications of metallic nanoparticles, especially gold nanoparticles or nanorods (or gold colloids), are very promising and attractive. The unique optical, chemical, and physical properties of gold nanoparticles make them an ideal candidate for biochemical sensing, medical diagnostics/therapeutics, imaging contrast agents, and photonic devices. The Photonics Research Group at Lakehead University is working towards the development of a photonics device to detect chemicals (e.g., proteins) using Surface-Enhanced Raman Spectroscopy (SERS). We will present the design of a probe using an optical fiber covered with nanostructure for application in chemical sensing."

DATE: **Wednesday, OCTOBER 5, 2016**

TIME: **8:30 am – 10:30 am**

Room: **CB 4058**