Lakehead UNIVERSITY | Department of Physics

Invites you to attend a Research Seminar by LU-TBRHRI Research Chair in Biophysics Candidate

DR. OLEKSII SEMENIUK

Postdoctoral Researcher
Medical Physics Department of Nova Scotia Health Authority

"Advanced photoconductors for radiation medical imaging detectors"

Solid state X-ray detectors play an essential role in a variety of applications, ranging from domestic security and astronomy to nuclear research and medical imaging. While the radiation sensing technology has made significant progress over the last decade, the "heart" of the detector (i.e. radiation sensing medium) has experienced only modest changes. Indeed, commercially available large area direct and indirect-conversion detectors are traditionally based on layers of amorphous selenium (a-Se) and cesium iodide (CsI), respectively. Nowadays, the performance of these materials has probably reached its full potential, despite the critical need for further improvement in terms of X-ray dose used and image quality. This is of particular importance for diagnostic medical imaging where performance of medical imaging devices defines the ability to detect and diagnose medical conditions accurately and at the earliest stage of disease. The goal of my work is to develop and characterize the next generation of customized X-ray photoconductors to address these issues. My talk will be focused on the most promising novel materials, namely amorphous lead oxide (a-PbO) and cesium lead bromide ($CsPbBr_3$) which uniquely allow to reduce the dose associated with X-ray imaging, while improving the diagnostic capabilities and lowering detector costs.

Bio: Dr. Oleksii Semeniuk is working as a postdoctoral researcher at the Medical Physics department of Nova Scotia Health Authority. The topic of his current research is development and characterization of a real-time monitoring system for cranial stereotactic radiosurgery. Oleksii completed his MSc and PhD at Lakehead University and his undergraduate at National Aviation University, Ukraine. His research interests lie in the area of radiation dose reduction for medical imaging applications. Particular, Oleksii is working on performance optimization of advanced X-ray photoconductors for utilization as X-ray-to-charge transducers in direct conversion detectors for fluoroscopy and general radiography.

DATE: **FRIDAY, JULY 27, 2018**
TIME: **1:00** PM
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