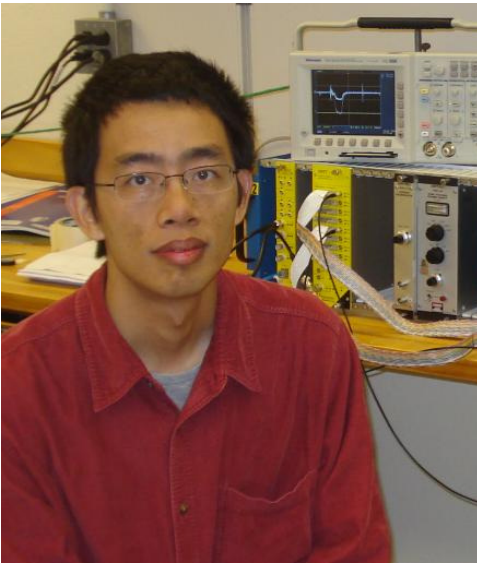


## **A 3D target tracking technology using Positron emission isotopes for medical applications**

**Dr. Tong Xu**

*Assistant Professor, Department of Physics, Carleton University*



**Nov 16, 2009**

*admission is free*

**18:00 – 19:30 pm**

**Mackenzie Building 3356**

**Carleton University**

*Light refreshment will be served*

Positron emission isotopes are the most useful radioactive isotopes in healthcare and related research. The talk will provide an introduction of the positron emission, annihilation, and the detection of annihilation gamma rays. Then the talk will provide a brief description of the principles and applications of positron emission tomography (PET). The second part of the talk will introduce a new technique based on positron emission isotopes: real-time 3D tracking. In this technique, marker will be implanted into tumors or embedded into surgical devices. By detecting annihilation gamma rays using pairs of position-sensitive detectors, the position of the markers can be tracked in real-time with high precision. The technique can improve the delivery accuracy of radiation therapy and open new possibilities for image guided surgery. The localization algorithm, experimental results with the first prototype will also be presented.

Tong Xu is an assistant professor in the Department of Physics, Carleton University. He received his PhD on Particle Physics in year 2000 from the University of Science and Technology of China. He has nine years of research experience in the areas of medical imaging physics and detectors, radiation therapy physics and delivery techniques. His current research interest is image-guided technologies for improving the delivery accuracy of radiation therapy.