

1:00pm-5:00pm | Oct 21, 2015 (Wednesday)

2C

Title:	Biomedical Photoacoustics: From Bench to Bedside
Lecturer:	Michael Kolios , Department of Physics, RYERSON University, Canada
Abstract:	Light can produce thermoelastic expansion through the non-radiative relaxation of photon absorption. In 1880 Alexander Graham Bell used sound waves (speech) to modulate the intensity of a light source and found that the sounds could be reproduced if the light beam was subsequently focused on to a thin diaphragm. Biomedical applications of photoacoustics were first proposed in the 1970s, and today hundreds of articles are published annually on numerous pre-clinical and clinical applications. The goal of this short course is to review the basic physics and engineering behind photoacoustic imaging and to explore the recent preclinical and clinical applications of this imaging technique.
Outline	<ul style="list-style-type: none">• Historical overview / Basic Principles• Fundamentals physics of light and sound propagation through tissue• Technological aspects of photoacoustics and imaging approaches• Principles of Functional PA imaging• Multimodality Imaging• Photoacoustic Contrast Agents• Pre-clinical and Clinical Applications• Future Directions

Biography



Dr. Michael C. Kolios is a Professor in the Department of Physics at Ryerson University and Associate Dean of Research and Graduate Studies in the Faculty of Science. His work focuses on the use of ultrasound and optics in the biomedical sciences. He directs the Advanced Biomedical Ultrasound Imaging and Spectroscopy laboratory which houses state-of the-art ultrasound tools using frequencies ranging from 1 to 1000 MHz to study the interaction of ultrasound and light with biological materials for imaging and therapy. Dr. Kolios leads a group of projects that focus on optical and ultrasound methods used to characterize tissues and disease, as well as to develop theranostic agents that will assist in both therapeutic and diagnostic applications. He is author of 73 peer-reviewed journal publications, 5 book chapters, and 96 papers in conference proceedings. He has received numerous teaching and research awards, including the Canada Research Chair in Biomedical Applications of Ultrasound, and the Ontario Premiers Research Excellence Award and the Ryerson Faculty Teaching Award. Dr. Kolios currently holds five patents (one of which is licensed), with another four under consideration. He is on the editorial board of the journals Ultrasound Imaging and Photoacoustics and is member of many national and international committees, including the IEEE International Ultrasonics Symposium Technical Program Committee. He is a member of the National Institutes of Health (NIH) Biomedical Imaging Technology A study section and was previously a member of the Canadian Institutes of Health Research (CIHR) Medical Physics and

Imaging (MPI) panel.