The Singapore Bioimaging Consortium (SBIC)
presents a seminar
on

"Listening to Light and Seeing Through : *In Vivo* Multiscale Photoacoustic Imaging"

Speaker: **Professor Kim Chulhong**
Director of Medical Device Innovation Center
Director of Bio Optics and Acoustics Laboratory
Pohang University of Science and Technology

Host : Prof Malini Olivo
Date : Friday, 21 April 2017
Time : 3.30pm – 4.30pm
Venue : SBIC Seminar Room
11 Biopolis Way
Level 2, Helios Building, Singapore 138667
(Please enter via Level 1)

Abstract

High-resolution volumetric optical imaging modalities, such as confocal microscopy, two-photon microscopy, and optical coherence tomography, have become increasing important in biomedical imaging fields. However, due to strong light scattering, the penetration depths of these imaging modalities are limited to the optical transport mean free path (~1 mm) in biological tissues. Photoacoustic imaging, an emerging hybrid modality that can provide strong endogenous and exogenous optical absorption contrasts with high ultrasonic spatial resolution, has overcome the fundamental depth limitation while keeping the spatial resolution. The image resolution, as well as the maximum imaging depth, is scalable with ultrasonic frequency within the reach of diffuse photons. In biological tissues the imaging depth can be up to a few centimeters deep. In this presentation, the following topics of photoacoustic imaging will be discussed; (1) multi-scale photoacoustic imaging systems (i.e., Photoacoustic Nanoscopy, Optical-Resolution Photoacoustic Microscopy, Fast 2-Axis MEMS based Optical-Resolution Photoacoustic Microscopy, Intravascular Photoacoustic/Ultrasound Catheter, Virtual Intraoperative Surgical Photoacoustic Microscopy, Acoustic-Resolution Photoacoustic Microscopy, Clinical Photoacoustic/Ultrasound Scanner), (2) morphological, functional, and molecular photoacoustic imaging, (3) potential clinical applications, and (4) contrast agents for photoacoustic imaging.

About the Speaker

Dr Kim Chulhong studied for his PhD degree and postdoctoral training at Washington University in St. Louis, St. Louis, Missouri under the supervision of Dr Lihong V. Wang, Gene K. Beare Distinguished Professor (main advisor), Dr Younan Xia, and Dr Samuel Achilefu. He is currently an associate professor of Creative IT Engineering, Mechanical Engineering, Electrical Engineering, and Interdisciplinary Bioscience and Bioengineering at Pohang University of Science and Technology in Republic of Korea. Before he joined the department, he was an assistant professor of Biomedical Engineering at the University at Buffalo, the State University of New York from Aug 2010 to Jan 2013. He has published 90 peer-reviewed articles in journals including *Nature Nanotechnology, Nature Materials, Chemical Reviews, Nano Letters, Angewandt Chemie, Journal of American Chemical Society, ACSNano, Radiology, Biomaterials, Scientific Reports, Optics Letters, Applied Physics Letters, Journal of Biomedical Optics, etc*. He also co-authored five book chapters. He has currently served as an Editorial Board Member of Scientific Reports (Nature Publishing Group), Photoacoustics Journal, and American Journal of Nuclear Medicine and Molecular Imaging. His research interests are the development of novel biomedical imaging techniques including photoacoustic tomography, ultrasound-modulated optical tomography, fluorescence imaging, ultrasound imaging, and laser speckle contrast imaging. Particularly, his lab developed photoacoustic gastro-intestinal tract imaging using organic agents, photoacoustic cystography, clinical photoacoustic/ultrasound imaging scanner (clinically translated and commercialized with Alpinion Medical), fast optical-resolution photoacoustic microscopy based on a 2-axis water-proof MEMS scanner (licensed to MGB and PAMsTech), virtual intraoperative photoacoustic surgical microscopy, raster scanning based photoacoustic whole body imaging of small animals, combined photoacoustic and optical coherence tomography using a single pulsed broadband laser source, acoustic-radiation force induced ultrasound-modulated optical tomography.

Admission is free and all are welcome ---