



IBS Center for Molecular Spectroscopy and Dynamics

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## COLLOQUIUM

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- **SPEAKER**

Dr. Jeon Woong Kang (Massachusetts Institute of Technology)

- **TITLE**

Color of Disease: From Cancer to Diabetes

- **ABSTRACT**

Since its establishment at 1985, MIT Laser Biomedical Research Center (MIT LBRC) has been solving biological and medical problems using optics and spectroscopy techniques. Based on intrinsic biological signals, spectroscopic tissue diagnosis has been successfully applied to various cancers as well as atherosclerosis.

This talk will mainly focus on two research topics.

1. Intra-needle optical sensor for needle tip tissue identification: Many medical procedures use a blind, or semi-blind, approach for needle placement. These procedures include epidural catheter placement, laparoscopic surgery trocar placement, tissue biopsies, joint injection, lumbar puncture, and fluid collection aspiration. Complications related to these procedures can be serious and are commonly a result of needle tip misplacement. There is a tremendous need for devices which allows identification of tissues at the tip of needles in vivo. Recently, we have developed an intra-needle optical sensor which can identify the tissue types at the needle tip. This may reduce the complication associated with needle misplacement and step change current blind needle placement procedures.

2. Non-invasive blood glucose monitoring: Noninvasive glucose monitoring has been a long-standing problem in diabetes management. A variety of strategies have been challenging this clinically unmet need. However, previous studies often showcased indirect glucose measurement or limited prediction capability. For the first time, we transcutaneously observed glucose spectral signatures from swine models. By simple subtraction of spectra with different glucose concentrations, the distinct glucose fingerprint was observed and its signal intensity was proportional to the reference glucose concentrations. We also demonstrated prospective prediction performance using partial least square regression.

- **DATE AND VENUE**

August 14, 2018 (Tuesday, 4:00 - 5:00 pm)

**Seminar Room B 119**, KU R&D Center

- **LANGUAGE**

Korean

- **INVITED BY**

Associate Director Wonshik Choi