DEPARTMENT OF MECHANICAL ENGINEERING COLLOQUIUM

UNIVERSITY OF CALIFORNIA
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# The Department of Mechanical Engineering

PRESENTS

## Sung-Yong Park, PhD


Assistant Professor
Optofluidic & Energy Systems Laboratory
Department of Mechanical Engineering
Biomedical Institute for Global Health Research & Technology (BIGHEART)
National University of Singapore (NUS), Singapore


**Friday, November 3, 2017**
**WCH Room 205/206**
**11:10-12:00PM**


***Abstract:***

With technical advances in the area of microfluidics, the idea of using fluids for light control, and vice versa, has attracted great attention in recent years. This emerging research field of optofluidics combines the advantages of the two disciplines of microfluidics and optics. By utilizing microfluidic technologies that effectively manipulates the shape and position of liquid interfaces without bulky and complex mechanical moving parts, optofluidic devices are able to adaptively control various optical performances such as focal length, reflection/refraction, and waveguide. Another advantage is the smooth fluidic interface formed as a result of minimizing the surface energy of fluids. Such optical-grade smoothness of fluidic interfaces is very useful and cost-effective by eliminating the need of high-precision fabrication or polishing processes typically required for solid optics. In addition, optics itself has been effectively used to manipulate small-scale objects such as single cells, micro/nano particles, and liquid droplets without direct mechanical contact. These features make optofluidic devices more functional and reconfigurable for numerous biological and micro/nanofluidic applications.

In this talk, I will briefly introduce several optofluidic technologies and how input energy can be transduced to induce micro/nanofluidic forces. I will also discuss about two optofluidic applications particularly interacted with the electrowetting principle, (1) smartphone integrated optoelectrowetting (SiOEW) devices for on-chip water quality detection and (2) optofluidic solar indoor lighting (OFSIL) systems.


***About the Speaker:***

Dr. Sung-Yong Park is an Assistant Professor in the Department of Mechanical Engineering at National University of Singapore (NUS). Before joining NUS, he was a research scientist at Teledyne Scientific Company (formerly known as Rockwell Science Center) where he led several cutting-edge R&D projects funded by ARPA-E, NASA, and Rockwell Automation. He received his doctoral degree from UCLA in 2010 (advisor: Prof. Eric P.Y. Chiou) and was further trained as a post-doctoral researcher at the UCLA Optofluidic Systems Laboratory.

His research focus is on micro/optofluidic systems for energy and water related applications. He was awarded the 2010 Harry M. Showman Prize, which was given to the very only outstanding graduate student having the best research achievements from the Class of 2010 graduates in the Henry Samueli School of Engineering and Applied Science at UCLA. He was also a recipient of the Graduate Student Researcher Scholarship from the UCLA Mechanical Engineering department, 2006.