NUS National University of Singapore | iHealthtech Institute for Health Innovation & Technology

"Innovating Health" Distinguished Speaker Seminar Series

Professor H. Tom Soh

W.M. Keck Foundation Professor
Professor of Department of Electrical Engineering, Bioengineering and Radiology
Stanford University, USA

Real-Time Biosensor Technology

2 SEP 2025, TUE, 4 PM – 5 PM
NUS, College of Design and Engineering, Building E7, Level 3, Seminar Room 4

Hosted by: Professor Lim Chwee Teck, iHealthtech Director

A biosensor capable of continuously measuring specific molecules in vivo would provide a valuable window into patients' health status and their response to therapeutics. Unfortunately, continuous, real-time molecular measurement is currently limited to a handful of analytes (i.e. glucose and oxygen) and these sensors cannot be generalized to measure other analytes. In this talk, we will present a biosensor technology that can be generalized to measure a wide range of biomolecules in living subjects. To achieve this, we develop novel reagents (molecular switches) that change its structure upon binding to its target analyte and emit light or produce an electrochemical signal. Our real-time biosensor requires no exogenous reagents and can be readily reconfigured to measure different target analytes by exchanging the molecular switches in a modular manner. Importantly, we will discuss methods for generating the molecular switches which are at the heart of this biosensor technology.

Speaker Biography | Dr. H. Tom Soh is the W.M. Keck Foundation Professor of Electrical Engineering, Bioengineering and Radiology at Stanford University. He earned his B.S. with Distinction with a double major in Mechanical Engineering and Materials Science from Cornell University and Ph.D. in Electrical Engineering from Stanford University. Prior to academia, he served as a technical manager of MEMS device research group at Bell Laboratories and Agere Systems. Between 2003 and 2015, he was the Ruth Garland Professor at UC-Santa Barbara (UCSB) in the departments of Materials and Mechanical Engineering. His lab moved to Stanford in 2015. He is a recipient of numerous awards including MIT Technology Review's "TR 100" Award, ONR Young Investigator Award, Beckman Young Investigator Award, ALA Innovator Award, NIH TR01 Award, Guggenheim Fellowship, Humboldt Fellowship, and Chan-Zuckerberg Biohub Investigatorship. He is a fellow of the American Institute for Medical and Biological Engineering (AIMBE) and member of the National Academy of Inventors (NAI).

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