

**Date**

April 21st (Tue), 2026

**Time**

16:00 – 17:30

**Venue**

Lecture Hall, S8-Building,  
Suzukake Campus, Institute of Science Tokyo  
東京科学大学 S8棟 レクチャーホール

Free Admission  
Language: English



## Lecturer: Xing Yi Ling, Ph.D.

*ACS Applied Materials & Interfaces*, and  
*ACS Applied Series Journals*, **Editor-in-Chief**

Professor

Nanyang Technological University, Singapore

16:00-16:30

“From Nanoparticles to Smart Sensors: Machine Learning-Driven SERS for Next-Generation Molecular Sensing”

Nanomaterial-based sensors (“nanosensors”) are attractive detection tool to detect multiple disease biomarkers swiftly and at point-of-care. These nanosensors make use nanometer-sized particles with unique physical, optical, and electrical properties to induce enhanced output signals in response to the detection and/or changes in concentrations of analytes. In this talk, I will discuss my group’s effort in using one of the nanosensors, surface-enhanced Raman scattering (SERS) nanosensors for various biomedical applications. SERS utilizes metallic nanoparticles such as Ag and Au to harness incoming light excitation, concentrate surface plasmon resonances, and boost the Raman vibrational signatures of biomarkers for ultrasensitive detection. Firstly, I will discuss various SERS platform fabrication strategies to bestow desirable chemoselectivity and increase target analyte/biomarker affinity to achieve higher detection sensitivity and selectivity. I will also highlight various emerging research strategies which utilize machine learning algorithms for rapid on-site prediction of disease infection. Specifically, how chemometrics and machine learning algorithms can transform the assimilation and interpretation of complex spectral data in biological samples by discerning more patterns hidden within the data, to achieve high throughput data analysis, sensitivity, and disease prediction. Collectively, these advances underscore the potential of SERS nanosensors and hybrid analytical strategies to address longstanding challenges in biomarker sensing and to accelerate innovation in biomedical diagnostics.

16:30-17:30

Introduction to ACS Applied Series Journals

- Mini-Quiz
- Ask me Anything (Q&A)