



IBS Center for Molecular Spectroscopy and Dynamics

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# Seminar

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- **SPEAKER**

Dr. Ju-Young Kim (IBS CMSD)

- **TITLE**

Development of tandem optical spectroscopy

- **ABSTRACT**

This talk introduces the research backgrounds of the speaker, newly joined to iBS as a research professor, focusing on the development of tandem optical spectroscopy and its applications to the analytical detection. Three main projects will be introduced: first two topics cover the improvement of surface-enhanced Raman spectroscopy (SERS), one of the widely used analytical methods for its high sensitivity and selectivity, by combining it with other analytical tools such as surface plasmon resonance (SPR) and electrochemistry. To wit, (1) the tandem SERS-SPR spectroscopy is capable of elucidating protein-ligand recognition by simultaneously detecting binding affinity (with SPR) and chemical identification (with SERS). On the other hand, (2) exploiting an amperometric method with SERS can trace the silver nanoparticle captured into the nanopore electrode arrays (NEAs) by applied potentials. The schematic illustration of the optics, plasmonics platforms, and the results of simultaneous detection will be followed and discussed to validate the versatility of the methods. Lastly introduced project is single molecule detection of the cellulase with the total internal reflection (TIR) spectroscopy with confocal microscopy. The detected signals from the Forster resonance energy transfer (FRET) labels on the cellulase enzyme would be able to prove the changes in protein structure during its hydrolysis on the cellulose microfibrils.

- **DATE AND VENUE**

September 14, 2022 (Wednesday, 13:00 - 14:00)  
Seminar Room A (116)

- **LANGUAGE**

English