

2025年度第9回応用分析化学セミナー

The 9th Applied Analytical Chemistry Seminar (The 83rd CMS International Seminar)

Integrated Multidimensional Optical Nanoscopy for Single-Molecule Superresolution Imaging and Tracking in Live Cells via Wavelength- Dependent Plasmonic Scattering



Prof. Seong Ho Kang
Department of Applied Chemistry
Kyung Hee University

December 25th (Thur), 2025, 15:00-16:00
Room 315, West 4 building-3F

Recent trends in super-resolution microscopy (SRM) focus on the development of various three-dimensional (3D) imaging techniques. However, optical artifacts still persist in 3D SRM images. To overcome these limitations and acquire diverse imaging information from multiple views of a sample across time and dimensions, we developed a novel integrated multifunctional optical nanoscopy system.

In this study, we present a new system and method for single molecule super-resolution imaging and tracking. The imaging platform integrates differential interference contrast, total internal reflection, epifluorescence, a super-resolution radial fluctuation stream module, and a wavelength-dependent light sheet. This advanced approach addresses the limitations of light sheet-based super-resolution microscopy, particularly optical distortions caused by uneven illumination. It enables real-time monitoring of intracellular transport and achieves sub-diffraction resolution, allowing precise localization and dynamic tracking of individual molecules and organelles. Beyond the conventional concepts of 4D and 5D imaging, this technique provides multi-view imaging information from various perspectives, adaptable to specific experimental demands.



九州大学
KYUSHU UNIVERSITY

Free admission

Contact: Noritada Kaji, kaji@cstf.Kyushu-u.ac.jp



九州大学
分子システム科学センター (CMS)
Center for Molecular Systems (CMS) Kyushu University