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강연제목:

Improving optical nanoscopy with differential stimulated emission depletion

Abstract:

Stimulated emission depletion (STED) super-resolution microscopy (or nanoscopy) offers significant enhancement of optical resolution compared to conventional microscopy. To achieve resolution beyond the diffraction-limit, STED nanoscopy uses orders of magnitude (roughly ~10^5) more photons than the conventional confocal microscopy. Those additional 'STED' photons, which are designed to deplete the fluorescence at the periphery of focus, can induce unintended background noise. Increased low spatial frequency background noise decreases the signal-to-background ratio (SBR) and deteriorates the image quality by masking the high spatial frequency, super-resolved signal. In this presentation, we report a simple and easy-to-implement method that can efficiently suppress the low spatial frequency background appearing in STED images. By using differential stimulated emission depletion (diffSTED) optical nanoscopy technique, simultaneous enhancement in spatial resolution as well as in SBR can be achieved without any hardware modifications.

Brief Biosketch

* 초고분해능 현미경 개발 연구, 세포 내 액체-액체 상분리 연구. Research Area: Super-resolution optical microscopy, Cellular liquid-liquid phase separation

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