



Esplanade Room 157: Monday, February 23

11:30 AM – 1:00 PM

Leica Microsystems

Expanding the Boundaries of Nanoscopy with Leica TauSTED Xtend: Enhanced Detection for Deep and Gentle Imaging

Stimulated Emission Depletion (STED) microscopy has transformed nanoscale imaging by enabling visualization of subcellular structures beyond the diffraction limit. Yet, the challenge of achieving high-resolution imaging deep within living samples—while minimizing phototoxicity—remains a critical barrier. Leica's STELLARIS TauSTED Xtend introduces a paradigm shift in super-resolution microscopy by harnessing fluorescence lifetime-based information and photon-efficient strategies to deliver gentle, high-quality imaging over extended time periods.

TauSTED Xtend transcends the limitations of traditional intensity-based and gated STED approaches, offering superior resolution at significantly reduced light doses. This advancement is made possible through its synergy with the extended Power HyD detector family and STED white objectives featuring SmartCorr technology, which together enable researchers to probe biological structures in depth with unprecedented clarity and minimal light dose.

In this presentation, we demonstrate how TauSTED Xtend facilitates long-term live-cell imaging using diverse fluorescent probes and labels, unlocking access to fast nanoscale dynamics of cellular processes such as signaling, gene expression, and protein trafficking. The integration of TauSTED Xtend into the STELLARIS confocal platform marks a major step forward in making nanoscopy more biologically relevant, empowering researchers to explore the living cell with unmatched precision and gentleness.

Speaker

Haridas Pudavar, Product Performance Manager – Confocal Systems, North America, Leica Microsystems Inc