Thursday, September 15, 2022

MICROSCOPY TECH PULSE

Microscopy Tech Pulse is a special edition newsletter from Photonics Media and Applied Scientific Instrumentation, Inc. covering key developments in microscopy technology.

Intelligent Microscope Framework Captures Biological Events

Biophysicists at École Polytechnique Fédérale de Lausanne (EPFL) introduced a method to automate microscope control for imaging biological events in detail with the help of artificial neural networks, while limiting stress on the sample. The team applied its development to the technique of fluorescence microscopy.

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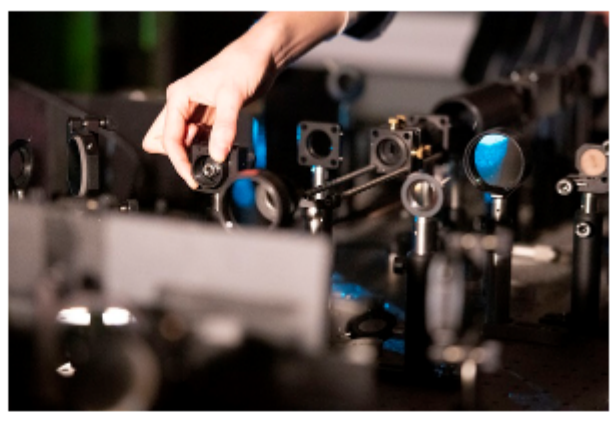

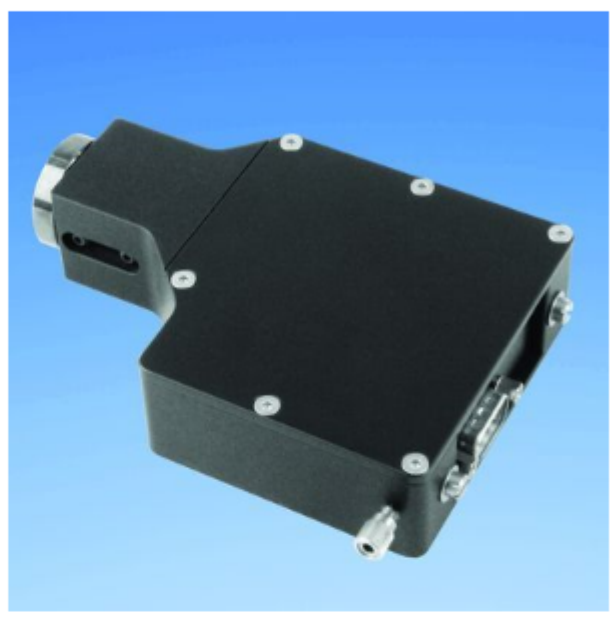

Signal Sorting Method Suppresses Noise in STED Microscopy

Researchers from Zhejiang University have proposed a novel microscopy method that selectively and effectively suppresses background noise in STED microscopy. The approach bypasses drawbacks that are caused by current methods used for noise suppression in STED imaging, which is considered a limitation of the technique.

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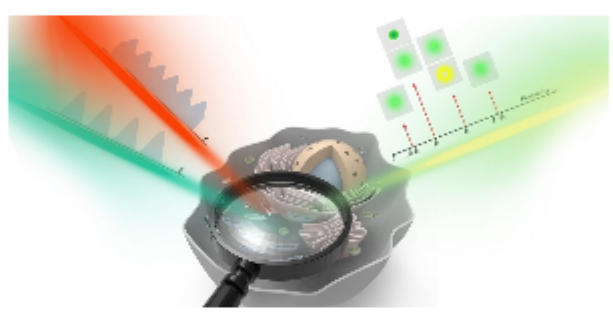

Microscopy Methods Pair to Advance Nanoscale Superresolution Imaging

Researchers combined stimulated Raman scattering (SRS) with expansion microscopy to develop a single microscopy technique that achieves superresolution vibrational imaging at the nanoscale. A team from Carnegie Mellon and Columbia universities developed the technique, called Molecule Anchorable Gel-Enabled Nanoscale Imaging of Fluorescence and Stimulated Raman Scattering Microscopy (MAGNIFIERS).

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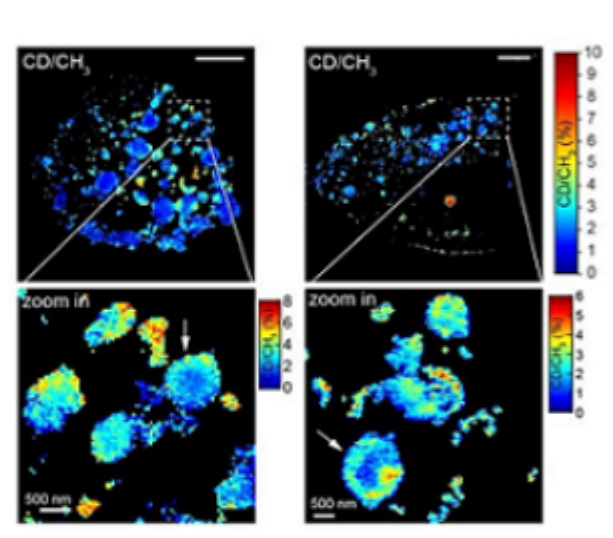

High-Throughput Imaging Links Microbial Metabolism With Cell Identity

An imaging platform for investigating microbiomes in medical and environmental samples can perform high-throughput metabolism and identity analyses with single-cell resolution. Called SRS-FISH, or stimulated Raman scattering (SRS) two-photon fluorescence in situ hybridization (FISH), the technique combines the advantages of SRS for single-cell stable isotope probing with two-photon FISH for identifying cells quickly and with a high level of sensitivity.

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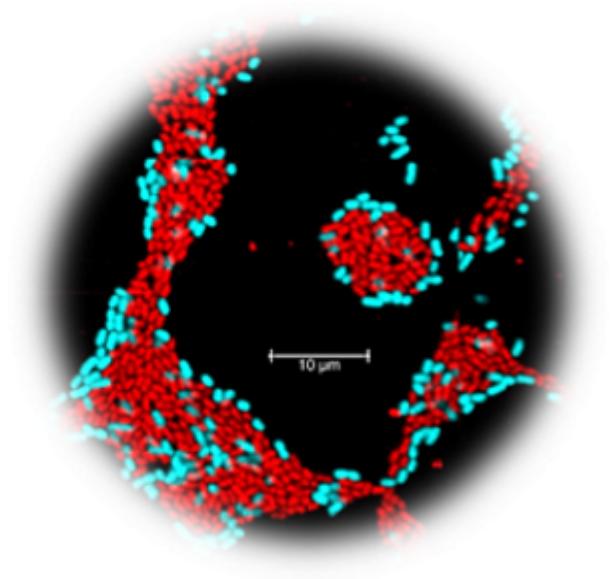

Expanding Expansion Microscopy to Reveal Hidden Nanostructures

Inside a living cell, proteins and other molecules are often tightly packed together. These dense clusters can be difficult to image because the fluorescent labels used to make them visible can't wedge themselves in between the molecules. Researchers at MIT developed a method to overcome this limitation by expanding a cell or tissue sample prior to labeling, effectively de-crowding the molecules and making them more accessible to fluorescent tags.

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