3 – 6 June 2025

EMBL Advanced Training Centre and Imaging Centre

INDUSTRY AND COMMUNITY ROOM

ABSTRACTS

WORKSHOP 5

THURSDAY | 5 JUNE | 15:50 – 16:50

Abbelight / Massive Photonics

Multiplexed DNA-PAINT Imaging with Abbelight's SAFe System (in collaboration with Massive Photonics)

Presenter(s):

Yashar Rouzbahani - Abbelight, France

Dassine Zouaoui - Abbelight, France

Over the past decade, DNA - Points Accumulation for Imaging in Nanoscale Topography (DNA-PAINT) has emerged as a versatile and robust Single Molecule Localization Microscopy (SMLM) technique, enabling higher spatial resolution than other SMLM techniques through methodological optimization. DNA-PAINT relies on the transient hybridization of complementary oligonucleotides instead of photoswitching of fluorophores to create the blinking needed for SMLM, which mitigates common problems of other techniques, like blinking density or buffer incompatibility. Furthermore, DNA-PAINT incorporates striking multiplexing capabilities, evidenced through numerous applications of Exchange-Paint.

In this workshop, we demonstrate a multiplexing DNA-PAINT workflow, pushing the limits even further by combining Exchange-Paint with Spectral Demixing. For sample preparation, we use the Abbelight DNA-PAINT Kit, which provides optimized reagents for efficient and reproducible labeling and imaging . The key element of this workflow is the Spectral Demixing approach, a ratiometric analysis enabling the separation of spectrally overlapping fluorophores based on their photon emission profiles. Up to three dyes within a closely spaced spectral range can be used simultaneously for imaging using only a single excitation laser and a shared optical path. The result is a streamlined and accelerated imaging strategy that reduces acquisition time, avoids chromatic aberrations, and maintains high spatial resolution with minimal crosstalk.

We will cover:

• DNA-PAINT imaging workflows enhanced by spectral demixing

• Use of the Abbelight DNA-PAINT Kit an easy sample handling

• 3C imaging strategy: combining 2C spectral demixing + 1C sequential acquisition

Schedule

10 min Introduction to DNA PAINT imaging

10 min Introduction to Abbelight Smart DNA PAINT Kit and Safe MN 360

25 min Multi color Spectral Demixing and Exchange DNA-PAINT for multi-color imaging

15 min Summary of the workshop & Questions

Abberior Instruments

Abberior STED-MINFLUX Workshop: Biological Imaging Across Scales

Presenter(s):

Bastian Klußmann-Fricke - Abberior Instruments GmbH, Göttingen

Clara-Marie Gürth - Abberior Instruments GmbH, Göttingen

Ulf Matti - Abberior Instruments GmbH, Göttingen

Biological samples span a vast range of sizes, from millimetre-scale organisms and tissues to nanometre-sized single molecules. Investigating these diverse samples necessitates a suite of optical microscopy functionalities. This includes large fields of view and high working distances for macroscopic specimens, optical compensation for thick tissues, and high resolution for subcellular and in vitro studies. Traditionally, these requirements demanded multiple specialized microscopes. The MIRAVA POLYSCOPE overcomes this limitation by integrating confocal, MATRIX, STED, and MINFLUX modalities into a single versatile platform.

Investigating the nuclear pore complex (NPC) at various levels of detail perfectly illustrates the need for a wide range of microscopy modalities. Confocal microscopy can reveal its cellular-level organization, while super-resolution techniques like STED and MINFLUX unveil its detailed macromolecular arrangement. To highlight the MIRAVA POLYSCOPE's comprehensive features, we will focus on the NPC as a prime example.

This workshop offers participants a unique opportunity to learn how to investigate a single biological structure across several orders of magnitude, spanning from diffraction-limited overviews to true molecular insights. Through hands-on demonstrations on the abberior MIRAVA POLYSCOPE, we will showcase how confocal, STED, and MINFLUX imaging can be strategically employed to answer different questions about the NPC at corresponding scales and resolutions.

Abberior Instruments

Abberior MINFLUX Workshop: 3D and 2 Colour MINFLUX Nanoscopy

Presenter(s):

Ulf Matti - Abberior Instruments GmbH, Göttingen

Clara-Marie Gürth - Abberior Instruments GmbH, Göttingen

Bastian Klußmann-Fricke - Abberior Instruments GmbH, Göttingen

Achieving molecular-scale imaging of protein complexes has long been a goal in the life sciences. MINFLUX nanoscopy addresses this challenge by precisely localizing single fluorophores through sequential fluorescence readout at defined positions surrounding the molecule. The use of a donut-shaped excitation beam enables localization with exceptional precision while minimizing photon requirements and thereby surpasses limits of other super-resolution techniques. Previously, such high-performance microscopy remained largely accessible only to specialized optics experts.

Here, we present the MINFLUX microscope built upon a conventional fluorescence microscope stand, providing this powerful technique for a broader range of users. This system seamlessly integrates ultra-high localization precision with standard experimental workflows, empowering non-experts to readily apply MINFLUX. We demonstrate its capabilities by visualizing intricate structures, such as the nuclear pore complex (NPC), at the nanoscale in three dimensions. Furthermore, through the labelling of different components within this complex, we achieve nanoscale resolution in two colours.

This workshop will provide participants with practical insights into the 3D analysis of biological structures using MINFLUX. We will showcase how two-colour MINFLUX experiments enable the detailed investigation of spatial relationships between different proteins at the nanoscopic level.

Bruker / Luxendo GmbH

Vutara VXL – Volumetric- and 3D-Single-Molecule-Localization Microscopy

Presenter(s):

Dr. Clemens Schneider, Bruker Fluorescence Microscopy, Germany

Modern fluorescence microscopy applications need to be performed in natural environments of the structures of interests. This requires using large samples, like tissue slices, organoids/spheroids or whole model organisms. One of the main limitations of most SML microscopes is their weak ability to image structures deeper than a few nm away from the coverslip.

Engineered with simplicity and functionality in mind, the Bruker Vutara VXL system is different, as it uses robust widefield illumination together with our patented Biplane detection. With this combination entire volumes in up to 50 µm depth inside the sample can be resolved in 3D with 25 nm resolution (or better). The comprehensive analysis pipeline in the SRX software provides insights into the 3D-distribution of the detected molecules within cells in their native environment.

Carl Zeiss Microscopy Deutschland GmbH

Lightfield 4D - Keeping pace with the pulse of life

Presenter(s):

Dr. Sven Poppelreuther, Carl Zeiss Microscopy Deutschland GmbH, Germany

LSM 990 and 910 – One imaging platform. Endless possibilities

Life moves. Many neuronal and physiological processes occur at very high speeds, making it difficult to accurately capture their spatiotemporal dynamics. Although established technologies have become faster, the required acquisition time still increases with sample volume. So, fast processes like neuronal activity or heartbeats require a trade-off between volumetric information and image frame rate. With Lightfield 4D, you no longer must compromise, as you can capture up to 80 volumes per second without time delay in 3D. This makes it possible to follow neuronal activity in zebrafish brains, track tissue movement in developing Drosophila embryos and keep track of moving structures in crawling C. elegans larvae.

The unique one-snap-one-volume acquisition of Lightfield 4D minimizes light exposure and allows to efficiently acquire thousands of volumes over extended periods of time without harming your sample. Reach new heights of productivity with the ability to capture multi-color images at multiple positions within or between whole organisms, organoids or spheroids, in a single acquisition run.

As an integrated part of ZEISS LSM 990 or 910 systems, Lightfield 4D lets you effectively combine its fast volumetric imaging with any other LSM acquisition method: involving photomanipulation, super-resolution, spectral, and even molecular dynamic data can be added to each live imaging session.

In our workshop, we will give you the opportunity to experience to capture all 3D information with up to 80 volumes per second. We will show how you can draw scientific conclusions from this new unique volume data by utilizing the 3D algorithms of ZEISS arivis pro.

LSMs are one of the most complex high-end microscopy systems – providing a great variety of options. Microscopy Copilot, your personal AI assistant, helps you to interactively discover new possibilities for your imaging experiments, constantly evolve your research and exploit the potential of your specific LSM system configuration. We will show you this new path to immediate support by ZEISS in times of increasing numbers of microscopy technologies and reduced time to publication.

Chip NanoImaging

Ultra-Large-Field-of-View Imaging Using Innovative Photonic Chip Technology

Presenter(s):

Merete Storflor - Chip NanoImaging, Norway

Luis Villegas - Chip NanoImaging, Norway

Jon Kristian Hagene - Chip NanoImaging, Norway

Explore the full complexity of biological processes with the largest uniform field of view available. Chip NanoImaging offers multi-channel TIRF imaging at the millimeter scale, delivering exceptional signal-to-noise performance through high refractive index contrast. Our multimode waveguide technology is seamlessly integrated into the sample carrier, providing tight light confinement, high intensity, and a flat illumination profile - ideal for super-resolution imaging. Our bio-compatible carriers are well-suited for both live and fixed cell imaging as well as for use with tissue sections. Further, our landmarked carriers enable robust correlative microscopy workflows. The system also integrates EPI fluorescence with advanced post-processing tools for 2D/ 3D deconvolution, along with GPU-accelerated reconstruction software for single-molecule localization microscopy (SMLM) data. Its versatility makes it ideally suited for studying membrane dynamics and drug interactions with precision and ease.

Join our workshop and experience how advanced photonic chip-based TIRF increases the power of imaging techniques like SMLM - by allowing for super-resolution imaging across ultra-large fields of view. For those interested, we can also demonstrate on-chip histology. We will also showcase our user-friendly reconstruction software, designed to efficiently reconstruct large datasets, ensuring a seamless and high-performance imaging workflow.

Community room workshop

Automated quality assessment of illumination and detection systems using the QUAREP-LiMi tool kit (WG1 & WG2)

Presenter(s):

Yann Cesbron - Institute of Science and Technology Austria - Austria

The QUAREP-LiMi Tool Kit [1] was developed by the QUAREP-LiMi community to reduce the time needed to run periodic quality assessment protocols and organise the performance data acquired. During this workshop we will present its basic features and latest developments.

In accordance to the protocol defined by the QUAREP-LiMi WG 1 [2] the Tool Kit integrates user friendly interfaces for the assessment of illumination power and stability. These interfaces are either incorporated in the microscopy acquisition software (Nikon and Zeiss) or – being added to its latest version – provided by the new SmartLPM [3] standalone application for any other brand. SmartLPM will be shown in more detail in a parallel community room session.

In addition, the Tool Kit now includes support for the protocols for detector gain, linear range and noise assessment developed by the QUAREP-LiMi WG2 [2].

A highlight of the Tool Kit is its data browser. Thanks to the organised presentation of the performance metrics it is easier to diagnose problems – e.g. a small but steady power decrease over months– and take corrective and preventive actions before they become detrimental.

The Tool Kit functionality will be demonstrated during the workshop, where we will emphasize important details of the protocols.

[1] https://github.com/QUAREP-LiMi/QUAREP-LiMi-Tool-Kit

[2] https://www.protocols.io/workspaces/quarep-limi/publications

[3] https://github.com/QUAREP-LiMi/SmartLPM

Community room workshop

Why should Microscopists from Academia join the International Organization for Standardization (ISO), and how can they do it?

Presenter:

Roland Nitschke - University of Freiburg Life Imaging Center - Germany

This workshop will provide an insight into some of the areas relevant to microscopists in the International Organisation for Standardisation (ISO).

In 2015, after a round table discussion with the four major microscope manufacturers - Evident, Leica, Nikon, Zeiss - members of the Quality Assessment Team of GermanBioImaging were invited to join the Standards Committee NA 027-01-04 AA Microscopes at the German Institute for Standardization (DIN), which, together with other similar committees in various countries, forms the ISO/Technical Committee (TC) 172/SC5 - Microscopes and Endoscopes with currently four working groups related to light microscopy - WG 3 - Terms and definitions, WG 9 - Optical performance of microscope components, WG 10 - Microscope systems.

Being part of ISO allows the academic microscopy community to help shape, improve, and extend the content of existing ISO standards and initiate new standards relevant to light microscopy with ISO's industry members.

SC 5 has published 41 standards, 8 are currently under revision/upgrading, and about 7 topics are considered for development in new standards. Here are some examples:

ISO 8255-1:2017 Cover glasses - Part 1: Dimensional tolerances, thickness and optical properties

ISO/AWI 21073 Confocal microscopes - Optical data for fluorescence confocal microscopes for biological imaging

ISO/PRF 10934 Vocabulary for light microscopy ISO/PWI 20235, Parameters of automated microscopy - Terms and measurement procedures

ISO/PWI 25698, Microscopes - Relevant optical properties of multiwell microplates for microscopic imaging

ISO/PWI 25697, Microscopes - Metadata for image acquisition

In the workshop, we will give examples and explain how you can join your national standards body as a member and thus be part of ISO; what kind of work you do/could do within ISO, and how much time you should ideally devote to it. We will also try to collect ideas/wishes for future ISO microscopy standards.

New members are always welcome and are needed to reduce the workload and bring relevant expertise and interests from academia to each WG.

CrestOptics

Lattice SIM across scales: breaking the diffraction limit barrier in Z-depth

Presenter(s):

Francesco Bacchi - Business Development Manager EMEA, CrestOptics Spa

Deep tissue imaging in complex biological samples is often limited by diffraction and scattering, particularly hindering the visualization of subcellular structures in the axial (Z) dimension. This workshop demonstrates the application of CrestOptics' DeepSIM, a lattice-based structured illumination microscopy technique, to overcome these limitations and achieve enhanced Z-depth resolution across diverse biological scales. We will present data showcasing DeepSIM's capabilities in resolving intricate subcellular details in HeLa cells, visualizing deep cellular architecture in cleared mouse brain tissue, and mapping the complex morphology and interactions of astrocytes. The results highlight DeepSIM's potential for providing new insights into fundamental biological processes, from cellular dynamics to tissue organization, across various model systems.

CSR Biotech

The New Frontier of Super-Resolution: Label-Free Meets SIM for Live-Cell Imaging

Presenter(s):

Christiaan Stuut - CSR Biotech, Heidelberg, Germany

Jinqing Wang - CSR Biotech, Guangzhou, China

Shutang Zeng - CSR Biotech, Guangzhou, China

This workshop offers a glimpse into the next generation of live-cell imaging with an in-depth introduction to the revolutionary SIM-Supreme system, uniquely integrating super-resolution Structured Illumination Microscopy (SIM) with label-free, quantitative 3D Optical Diffraction Tomography (ODT).

We will delve into the principles of ODT, explaining how this powerful technique utilizes refractive index measurements to generate label-free 3D visualizations of cellular structures and dynamics with exceptional contrast and minimal phototoxicity. Discover how ODT can provide complementary information to fluorescence-based methods, enabling long-term, non-invasive studies and intrinsic contrast of cellular components.

We are excited to offer a remote demonstration of the SIM-Supreme's integrated capabilities. Witness firsthand how the SIM-Supreme seamlessly combines super-resolution SIM and label-free ODT within the intuitive IMAGER software. We will showcase real-time data acquisition and processing, highlighting the synchronized workflows for both modalities and demonstrating the powerful potential for correlative studies.

This workshop is ideal for researchers interested in the future of live-cell imaging and the potential of combining super-resolution fluorescence microscopy with label-free 3D tomography. Join us to learn about the innovative SIM-Supreme and witness the power of a unified multi-modality workflow within the IMAGER software.

EVIDENT Europe GmbH

Having trouble imaging thick samples? Come and learn the power of VS200 SILA speckle illumination.

Presenter(s):

Wei Juan Wong - Evident Technology Center Europe, Germany

Slide scanners are increasingly popular among researchers for their compact design and versatile applications, especially when used with widefield (WF) fluorescence microscopy for thin specimens. But thick sample are dense and highly autofluorescent; making it almost impossible to get clear images and distinguish individual structures and cells. We have the solution, the VS200 slide scanner with SILA speckle illumination unit will allow you to image thick samples clearly and at a high speed. Integrated with the SLIDEVIEW VS200 slide scanner, SILA provides rapid optical sectioning, significantly enhancing contrast by removing out-of-focus light. This method employs advanced algorithms and speckle scrambling to produce clear, blur free images, making it ideal for detailed visualization and analysis of complex biological samples. This technology allows the removal of out-of-focus light from widefield images, achieving performance similar to that of confocal microscopy from UV up to infrared wavelengths.

ibidi GmbH

Labware & Cell-Based Assays

Presenter(s):

Michael Loser - ibidi GmbH

High quality images of cells require innovative technologies that enable scientists to tackle the underlying mechanisms of major illnesses such as cancer, cardiovascular conditions, and autoimmune diseases. This workshop will focus on how to link optimized cell culture with cell-based assays and high-end microscopy.

ibidi's labware solutions are developed to optimize the daily lab routine, providing all-in-one tools for 2D and 3D cell culturing, immunofluorescence staining, histochemistry and live cell imaging. In addition, our labware includes specific geometrical designs developed for functional cell-based assays such as migration, chemotaxis and angiogenesis.

The workshop also provides an introduction to life cell microscopy and the advantages and possibilities of cultivating cells in 2D and 3D under continuous, long-term medium flow.

ibidi's instruments allow scientists to perform in vitro assays that provide more reliable results and better represent in vivo conditions found in humans and animals.

Take a look at how ibidi could support you with its integrated approach to cellular microscopy and cell-based assays.

Leica Microsystems

TauSTED Xtend – gentle nanoscopy to observe the dynamics of life

Presenter(s):

Julia Roberti - Leica Microsystems, Germany

Luis Alvarez - Leica Microsystems, Germany

Ulf Schwarz - Leica Microsystems, Germany

Using STED (Stimulated Emission Depletion) Microscopy, researchers have realized the visualization of intracellular structures at the nanoscale, unveiling insights into the structural-function relationship of biological processes such as cell signalling, gene expression, and protein synthesis.

However, the light dose levels applied in Super-Resolution Microscopy to achieve the required temporal and nanoscopic scale, are often incompatible with preserving the viability of the specimen. TauSTED Xtend pushes beyond the limits of intensity-based and gated STED, allowing for superior resolution and image quality at lower light dose.

In this workshop, we will demonstrate how TauSTED Xtend enables gentle live cell imaging at the nanoscale using different probes and labels in living cells. We will show that TauSTED Xtend delivers cutting-edge resolution and image quality at low light dose, key to accessing fast nanoscale dynamics of cellular processes.

References

L. A. J. Alvarez, U. Schwarz, L. Friedrich, J. Fölling, F. Hecht, and M. J. Roberti (2020). Pushing STED beyond its limits with TauSTED. Nat Methods. Doi: d42473-021-00241-0

Lyncée Tec

Fast, Label-Free, Live-Cell Analysis with Digital Holographic Microscopy

Presenter(s):

Benjamin Rappaz

Head of Life Sciences

Lyncée Tec, Lausannne, Switzerland

Digital Holographic Microscopes (DHM®) by Lyncée Tec offers a fast, label-free, noninvasive imaging approach based on quantitative phase measurements. This technique enables real-time monitoring of living cells, providing metrics such as cell morphology, dry mass, and intracellular dynamics without the need for exogenous labels or dyes. Thus, allowing to quantify cell health status and ongoing bioprocesses without perturbing your cells.

In this workshop, we will present the principles and key applications of DHM® in life sciences:

Quantitative analysis of morphology, proliferation, and cytotoxic responses

Applications for high-content screening and long-term live-cell monitoring

4D tracking of live cells

The system offers multi-objective support (2.5x to 100x), a large field of view (up to 1.3 mm at 5x), and fast acquisition speeds (up to 194 fps), allowing robust and scalable live-cell imaging. DHM® can also be correlated with fluorescence for simultaneous recording and correlative studies.

Case studies and live demonstrations will illustrate how DHM® enables reproducible, high-throughput analysis of cellular processes, with minimal perturbation to the biological system. The session is intended for researchers seeking robust, quantitative, and label-free imaging methods for live-cell studies.

More info:

www.lynceetec.com

benjamin.rappaz@lynceetec.com

Miltenyi Biotec B.V. & Co. KG

Integrated 3D Imaging Workflows: From Sample Prep to Stunning Results with the UltraMicroscope Platform

Presenter(s):

Luigi Prisco, Miltenyi Biotec B.V. & Co. KG

Zahra Labbaf, Miltenyi Biotec B.V. & Co. KG

Rafael Kurtz, Miltenyi Biotec B.V. & Co. KG

L Prisco1, Z Labbaf1, R Kurtz1, C Ahlert1

1 Miltenyi Biotec B.V. & Co. KG.

Visualizing the three-dimensional architecture of complex and large biological specimens has traditionally been a time-intensive task, often taking hours to days. Miltenyi Biotec simplifies this process with a complete, end-to-end workflow encompassing sample preparation, imaging, and data processing – all centered around the UltraMicroscope Platform.

Featuring both the UltraMicroscope Blaze™ and the UltraMicroscope Choros™, our platform delivers fast, high-resolution light sheet imaging for a wide range of sample sizes. In this workshop, we invite you to join us for a live demonstration that walks through the entire 3D imaging process, showcasing our latest innovations: LightSpeed Mode, which accelerates imaging performance; MACS UltraMounts, enabling high-throughput 3D imaging; and the MACS iQ View – 3D Large Volume software, which simplifies image processing.

Discover how our cutting-edge technology delivers scalable, efficient 3D imaging to accelerate your research.

A whole mouse brain cleared with the MACS Deep Clearing Kit and stained with antibodies for tyrosine hydroxylase (Vio G570, magenta), NeuN (Vio R667, purple), and neurofilament (Vio 780 Yellow) and imaged on the UltraMicroscope Blaze™ light sheet system.

Nikon Europe B.V.

Advances in Automated imaging with Eclipse Ji and X-Light V3

Presenter(s):

Subash Chinnaraj - Nikon Europe B.V., Netherlands

Lisa Sanchez - Nikon Europe B.V., Netherlands

Herman Fennema - Nikon Europe B.V., Netherlands

The growing adoption of 3D samples in microscopy and High Content Screening presents unique challenges, including increased experimental time, higher data storage requirements, difficulties in experimental setup, inconsistencies in locating samples and effective optical sectioning. During the workshop, we will demonstrate how these challenges are addressed through the integration of the Eclipse Ji with the X-Light V3 Spinning-Disk Confocal System, including:

Enhanced ease of use with sample detection, autofocus, and automated light path configuration.

Advanced and intelligent assays with fully automated imaging and analysis workflows utilizing NIS-Elements JOBS and General Analysis (GA3).

Simplified fluorescence slide scanning with a graphical user interface (GUI) for sample detection and scanning.

NIS-Elements Smart Experiments:

Furthermore, we will present the latest developments in Smart Experiments, a high-content screening module within NIS-Elements designed to significantly reduce experiment time and improve efficiency.

These developments address key challenges, including optimizing time-lapse assays, enhancing data quality when imaging uneven well plate bottoms, and streamlining multi-plate assay workflows.

ONI

From Basics to brilliance. Using the ONI Nanoimager with the Discovery Kit: dSTORM in cells – The ultimate kit to prepare your samples for super-resolution with ease.

Presenter(s):

Dr. rer. nat. Nensi Alivodej - Field Application Scientist, EU - nalivodej@oni.bio

Pip Timmins - Sales Executive - phillipa@oni.bio

From Basics to brilliance. Using the ONI Nanoimager with the Discovery Kit: dSTORM in cells – The ultimate kit to prepare your samples for super-resolution with ease.

The Nanoimager is a compact and state-of-the-art microscope, offering quantitative analysis for localization-based imaging (dSTORM and PALM), single-particle tracking and single-molecule FRET. The Nanoimager is designed to operate on a standard lab bench and has a footprint smaller than a piece of A4 paper, making it more accessible to researchers.

The ONI Discovery Kit™ for dSTORM imaging provides a modular workflow for immunofluorescent labeling in cultured cells, which allows you to confidently detect extra and intracellular proteins in two channels with 20 nm resolution and high sensitivity in your own samples. You provide the cells and custom antibodies, we provide the rest!

This workshop is intended for people who are looking to brush up on their knowledge of dSTORM and push their research further. Workshop attendees will receive a 10% discount voucher to be redeemed against the purchase of a Discovery Kit.

Oxford Instruments

Unlock the Potential of Microscopy Images with AI-Enhanced Analysis in Imaris 10.2

Presenter(s):

Julia Schweizer - Oxford Instruments

In this presentation, we will explore how the AI segmentation and classification tools in Imaris 10.2 can revolutionize your microscopy image analysis. This version features a Trainable Pixel Classifier, integral to its robust big-data segmentation model, capable of efficiently handling large datasets (hundreds of GBs) and enabling training on thick slices to visualize complex biological structures.

Imaris 10.2 facilitates advanced 3D visualization and analysis of various cell types, including neurons microglia, as well as subcellular components like the cytoskeleton, nuclei, and Golgi apparatus, along with organoids and blood vessels. The software automatically generates morphology measurements to enable comparisons across experimental conditions, investigates interactions between cells and organelles, and calculates distances and colocalization metrics.

For live-cell and time-lapse imaging, Imaris 10.2 excels in tracking dynamic objects, including dividing cells, allowing for comprehensive studies of morphological changes and interactions over time. Furthermore, with enhanced visualization speeds—twice as fast as previous versions—Imaris 10.2 significantly improves user interactivity. This version is available natively for both PC and Apple M platforms, making it a versatile tool for researchers.

Learn how ease of use can be combined with complex image analysis and sophisticated multi-step image analysis workflows. Imaris will become a game changer in your lab or imaging facility, providing all the image analysis tools needed from the moment of data acquisition to publishing a paper, including deconvolution, visualization, object detection, analysis and plotting - for data exploration and group comparisons.

PhaseView

Ultra-thin Light Sheet Microscopy Providing Multi-user Experience Combined with Automated Multi-scale Imaging Capabilities

Presenter(s):

Igor Lyuboshenko - PHASEVIEW

Alpha3 Facility Edition is an automated light sheet microscope designed for imaging facilities and research laboratories. It integrates key technologies to deliver ultra-thin light sheet thickness and a multi-user experience, from rapid sample screening to high-resolution image acquisition of fixed or live samples and whole cleared specimens. The system offers a seamless multi-scale imaging experience for diverse applications, enabling multiple users to observe the same sample at various scales without compromising imaging resolution.

As a fully automated system, the Alpha3 Facility Edition configures itself when changing magnification, allowing users to focus on capturing images. It recovers all settings and calibration parameters, providing a personalized multi-user and multi-application experience. Intelligent illuminators coupled to a wide-field detection microscope ensure maximum homogeneous light coverage for both small and large samples. Illumination from both sides simultaneously covers the maximum area of the sample. Observation is possible through oculars and with a camera.

The system features an extended working distance and objectives with high numerical aperture, providing a very thin optical section with optimized sharpness. It allows varying the orientation of the sample sectioning plane within the specimen, maintaining homogeneous image sharpness over the entire field of view. It automatically configures lenses for illumination and detection, optimizing image quality and ensuring excellent colocalization of images acquired with multi-wavelength light beams, thanks to the dynamic focusing module.Alpha3 Facility Edition offers advanced capabilities in light sheet microscopy, providing a versatile and automated solution for multi-user environments and diverse imaging applications. You are welcome to join us to explore these innovative features and discuss potential collaboration opportunities to further advance your research.

PicoQuant GmbH

Performing ISM-FLIM with Luminosa`s PDA-23 detection add-on

Presenter(s):

Isabel Gross - PicoQuant GmbH, Germany

Mathias Bayer - PicoQuant GmbH, Germany

Recently, high-performance SPAD-arrays featuring few tens of pixels have become available. Combining these with suitable multi-channel TCSPC-devices enables time-resolved Image Scanning Microscopy (ISM). ISM enhances the spatial resolution and increases image contrast compared to standard confocal imaging. FLIM can provide additional functional information as well as extended marker multiplexing using lifetime contrast. So both technologies complement each other.

In this workshop we will show how the PDA23 SPAD Array is implemented in Luminosa. The newly released software NovaISM enables the analysis of ISM-FLIM images acquired with the PDA-23 Add-On of the Luminosa microscope. Image scanning microscopy (ISM) with a SPAD array detector achieves resolution enhancements of about 1.5 to 1.7 times in comparison to standard confocal images, in combination with deconvolution. Even for 2d-recordings/data the contrast of the ISM-FLIM images is enhanced significantly by rejecting the out-of focus light. Such rejection enhances not only the signal-to-noise-ratio, but also the lifetime contrast of the FLIM images. These benefits enable either faster image acquisition or gentler imaging of live samples.

Thorlabs

Alignment-Free Two-Photon Microscopy with the Prelude® System

Presenter(s):

Anja Huss - Thorlabs GmbH

Sergey Matveev - Thorlabs GmbH

Alexander Jelzow - TOPTICA Photonics AG

Multiphoton microscopy is a powerful method for probing neuronal activity and other complex biological events, yet it has long depended on intricate, specialist instruments that hinder accessibility. This workshop presents an alignment-free system that streamlines multiphoton imaging, expanding its reach to a wider community.

The Prelude® Functional Imaging Microscope by Thorlabs is a compact, fully integrated two-photon system designed to meet the demands of modern neuroscience and functional imaging. Developed in collaboration with researchers from Baylor College of Medicine and Columbia University, the Prelude addresses real-world experimental challenges by offering a maneuverable platform optimized for in vivo imaging of green fluorescent protein (GFP) and GCaMP6-labeled samples.

At its core, the Prelude features a 920 nm femtosecond pulsed laser coupled via fiber optics, eliminating complex alignment procedures and enhancing portability. Here, we use TOPTICA FemtoFiber Ultra 920 FD laser with high-power fiber delivery of femtosecond pulses. The system incorporates a silicon photomultiplier (SiPM) detector with greater than 38% photon detection efficiency at 500 nm, ensuring high-quality signal acquisition even in challenging specimens. Low profile and flexible XYZ translation and manual ±90° rotation provide versatile sample access, accommodating various experimental setups.

For fine Z-focus control, users can choose between a vibrationless liquid crystal remote focus system and a high-speed piezo objective scanner, facilitating rapid volumetric imaging without disturbing live specimens. The Prelude supports a range of long working distance objectives, including the TL10X-2P and TL15X-2P dry objectives, as well as the N16XLWD-PF water-dipping objective, catering to diverse imaging requirements.

This innovative microscope exemplifies Thorlabs' commitment to customer-inspired design, offering a flexible and user-friendly solution for advanced functional imaging applications.

Tomocube Inc.

Holotomography : the next imaging breakthrough is unlabeled

Presenter(s):

Bruno Combettes - Tomocube Europe, Germany

Daniel Ghete - Tomocube Europe, Germany

"No stains. No labels. Just truth. See what you've been missing."

Label-free holotomography is redefining the way we explore live cells in 3D. By harnessing refractive index as intrinsic contrast, this cutting-edge technique enables high-resolution, quantitative imaging without the need for fluorescent dyes or stains. This workshop will introduce the fundamentals of holotomography, showcase applications in live-cell and tumoroid imaging, and provide insights into how it can complement your existing microscopy toolbox.

Whether you're managing an imaging facility or looking for new approaches in your research, this is your chance to discover the full potential of label-free imaging.

The showcased setup integrates holotomography with the CrestOptics spinning disk confocal module, giving you the best of both worlds — intrinsic contrast and molecular specificity, all in real time. Holotomography reveals structure and dynamics without labels. Spinning disk confocal adds molecular context with high-speed fluorescence imaging. Together, they offer a unique correlative approach — where cellular truth meets targeted insight.

그들은 함께 Cellular Truth가 목표 통찰력을 충족시키는 독특한 상관 접근법을 제공합니다.

Visitron Systems GmbH

VisiTIRF Orbital-110 ISO RingTIRF illumination with new "Ultra Flat Homogenizer Technology"

Presenter(s):

Dr. Bernd Zobiak - Sales and Application Support - Visitron Systems GmbH Puchheim

Dr. Marcel Dunkel - Sales and Application Support - Visitron Systems GmbH Puchheim

The new Visitron VS-Orbital-110 IsoTIRF tackles these limitations by providing a flat intensity profile whilst maintaining an optimal focusing of the laser beam at the sample plane. This new design was used to enhance the uniformity of laser illumination for the Ring-TIRF technology offering an even evanescent field illumination of large areas and allowing for high-sensitivity imaging of living cells, without the need for mathematical shading correction.

We offering two different input optics either with higher laser throughput or with better uniformity. We are improving the uniformity from about 80% down to 5% - 12% roll-off values between 405nm to 640nm laser illumination measured at the FOV of a sCMOS Prime (18.8mm diagonal). In addition, the IsoTIRF offers the largest field of view in the TIRF market at over 22mm.