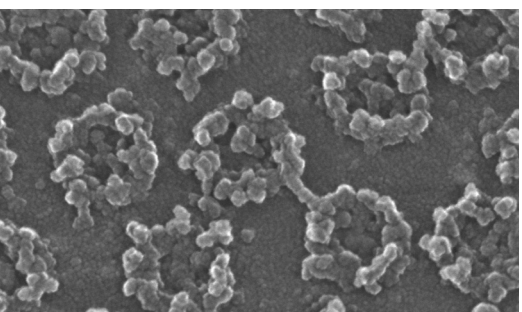
From Eye to Insight

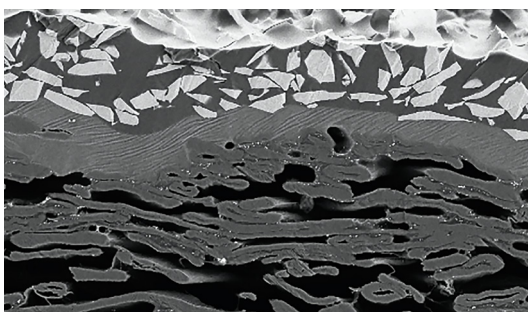
Leica
MICROSYSTEMS

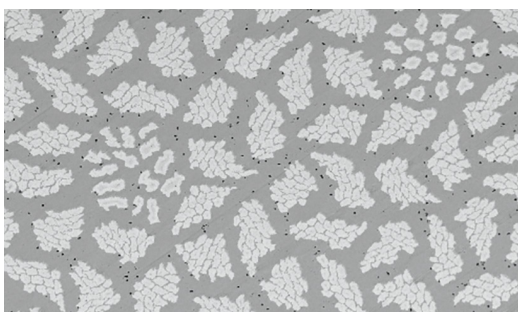
MEETING THE CHALLENGES OF EM SAMPLE PREPARATION

THE LEICA EM SAMPLE PREPARATION PRODUCT PORTFOLIO

Highly comprehensive product portfolio for
preparation of biological, medical, and industrial samples.







SAMPLE PREPARATION WITH LEICA MICROSYSTEMS – THE PORTFOLIO THAT GIVES YOU SUCCESS FOR YOUR APPLICATION

TRIMMING & MECHANICAL PREPARATION	EM TXP, EM RAPID
ION BEAM MILLING	EM TIC 3X
ULTRAMICROTOMY & CRYO-ULTRAMICROTOMY	EM UC7, ARTOS 3D, EM FC7, EM KMR3
SAMPLE TRANSFER	EM VCT500, EM VCM
CLEM & CRYO CLEM	Coral Life Coral Cryo THUNDER Imager EM Cryo CLEM
CRYO PREPARATION	EM ICE, EM GP2, EM AFS2, EM CTD
COATING & FREEZE FRACTURING	EM ACE200, EM ACE600, EM ACE900
TISSUE PROCESSING	EM TP
CONTRASTING	EM AC20
CRITICAL POINT DRYING	EM CPD300

FOCUSING ON WORKFLOW SOLUTIONS, WE PROVIDE A PRODUCT RANGE ALIGNED WITH YOUR NEEDS FOR TEM, SEM, CLEM, AND AFM EXPERIMENTS.

Cover images: top: Nematode Eubostrichus dianae with ectosymbiotic bacteria layer, critical point dried with the EM CPD300 (source: Mag. N. Leisch, University of Vienna, Austria); bottom left: Clawed frog (Xenopus laevis), nuclear pores (source: Dr. Martin Goldberg and Christine Richardson, University of Durham, UK); bottom middle: cross section of abrasive paper, prepared with the EM TIC 3X (source: Wolfgang Grünewald, TU Chemnitz, Germany); bottom right: cross-section of a Nb3Sn superconductor, prepared with the EM TXP and EM TIC 3X (source: Wolfang Grünewald, TU Chemnitz, Germany).

TRIMMING & MECHANICAL PREPARATION

EM TXP
EM TXP is Leica's dedicated tool designed for precise mechanical target preparation for a broad range of light and electron microscopy applications.

> Allows for very fine polishing of surfaces, revealing buried features
> Accurate preparation of barely visible targets
> In-situ stereomicroscope observation

EM RAPID
Advanced specimen trimming device for TEM, SEM, and LM.

> 0.5, 1, 10, 100 µm step advance
> Adjustable cutting speed 300–20,000 rpm
> Advance indication on LCD display

ION BEAM MILLING

EM TIC 3X
The Triple Ion Beam Milling System allows for production of cross sections and planed surfaces for SEM microstructure analysis (EDS, WDS, Auger, EBSD), and AFM investigations.

> Broad and deep cross sections
> Uniform, large area milling
> Interchangeable stages: Standard stage, Multiple sample stage, Cooling stage, Rotary stage
> Preserve sample quality by adding EM VCT500 – a versatile vacuum cryo transfer system.

The EM TIC 3X outfitted with an EM VCT500 docking station is the ideal solution for environmentally sensitive and / or cryogenic sample transfer.

SAMPLE TRANSFER

EM VCT500
Versatile vacuum cryo transfer system for contamination-free transfer of specimens between different preparation and analysis instruments.

> Specimen monitoring throughout workflows.
> Connects workflow steps from sample preparation to EM
> Connects to more than one SEM
> Various specimen holders for SEM, FIB-SEM, freeze-fracture, and more

EM VCM
LN_2 cooled workstation for contamination-free specimen manipulation.

> From sample loading on, all transfers under vacuum.
> Improved connectivity given by a movable loading sphere, Cryo-TEM transfer holders, and CLEM adaptors for the THUNDER Imager EM Cryo CLEM and STELLARIS 5/8 Cryo.

ULTRA MICROTOMY & CRYO-ULTRA MICROTOMY

EM UC7
Ultramicrotome for ultrathin sectioning of biological and industrial samples.

> Precision mechanics, ergonomic design, and intuitive User Interface
> LED light sources provide superior visibility
> Autotrim mode
> M80 stereomicroscope with ErgoWedge

EM FC7
Low temperature ultrathin cryosectioning of biological and industrial samples. Can be mounted on the EM UC7 and the ARTOS 3D.

The EM FC7 can be outfitted with an EM VCT500 to transfer environmentally sensitive and / or cryogenic samples.

> Temperature range from +110 °C to -185 °C
> Individual temperature settings for specimen, knife, and gas
> Easy section collection using micromanipulator and EM CRION ionizer
> Option to add: EM VCT500 – a versatile vacuum cryo transfer system.

ARTOS 3D
Array Tomography solution for automatic creation and collection of hundreds of serial-section ribbons ready for SEM array tomography.

> Fast setup with user pre-defined programs
> Wrinkle-free sorting and positioning of ribbons on section carrier (ready for SEM imaging)
> Transparent section carriers available - ideal solution for CLEM

EM KMR3
Balanced-break glass knife maker to produce 45° glass knives from 6.4 mm, 8 mm, and 10 mm glass.

> Highly reproducible, outstanding knife quality
> Automatic reset of the breaking and scoring mechanism
> Ergonomic design for comfortable use

CLEM & CRYO CLEM

Coral Life
Correlative live-cell and electron microscopy workflow

- Investigation of dynamic events with nanometer resolution.
- Combination of fluorescence dynamic data with precisely timed EM analysis.

THUNDER Imager Nano
3D live-cell microscope with incubator, SampLink chambers for fast sample transfer to the EM ICE Nano, and a sapphire-optimized objective.

- Fast, 3D live-cell imaging for accurate physiological studies
- Blur removal for better target identification with THUNDER technology.
- Optimized resolution and targeting with a sapphire-corrected objective

EM ICE Nano
High pressure freezing for cryo-immobilization of live cells and optimal sample fixation. Full compatibility with SampLink chambers.

- Enables capturing of transient events with a transfer time under 5 seconds
- Full vitrification of adherent cells
- Optimal results with the market-leading solution

Coral Cryo
Correlative 3D cryo light microscopy to support cryo-electron tomography.

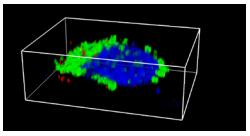
- Monitoring of cryo sample quality
- Increased reliability of subsequent cryo-electron tomography steps

STELLARIS 5/8 Cryo
Confocal cryo light microscope with a dedicated cryo objective and a cryo imaging chamber.

- Superresolved images for precise and reliable targeting
- Monitoring of ice thickness
- Access to advanced information by fluorescence life time (TauSense).

Cryo Microscopy Kit
Cryo transfer shuttle and cryo stage for loading, transfer, and imaging under vitreous conditions.

- Full visibility during intuitive loading of grids under gaseous nitrogen.
- Overpressured stage to avoid contamination
- Software-embedded temperature control



Coral Cryo Software
Tailored software workflow for correlative 3D targeting.

- User-friendly software workflow
- Innovative, 3D targeting allows for precise positioning of coordinate markers
- Data export in open formats

Cryo CLEM
Correlative 2D cryo light microscopy to support cryo-electron tomography and cryo-TEM approaches.

THUNDER Imager EM Cryo CLEM
Camera-based cryo light microscope with a dedicated cryo objective. Imaging chamber and shuttle enable sample quality check and 2D targeting under vitreous conditions.

- Blur-free, fast cryo imaging (THUNDER technology)
- Optimal cryo conditions during loading, transfer, and imaging
- Image data and coordinates provided in open formats for coordinate retrieval in EM

CRYO PREPARATION

EM ICE
High pressure system for freezing aqueous samples delivers optimal sample preservation. Offers the highest flexibility to meet multiple application demands.

- Programmable sequential freezing of nine samples (3 × 3)
- Automated LN_2 re-filling of the sample storage dewar
- One minute recovery time between freezing cycles
- Retrofitable light and/or electrical stimulation mode

EM ICE Light Stimulation (LS)
All the features of EM ICE standard, in addition offers fully integrated light stimulation.

- Software integrated programming for LS
- Automatic recondition of the specific light module
- Modules with different LEDs (wave lengths): UV, blue, red, green, amber
- Detailed log file of each experiment
- Light stimulation precision of 1 millisecond

EM ICE Electrical Stimulation (ES)
All the features of EM ICE standard, in addition offers fully integrated electrical stimulation.

- Millisecond precision
- Complete coordination of electrical discharge at the moment of freezing
- Capturing and imaging action potential and membrane trafficking events

EM GP2
Automatic plunge freezer for EM grids.

- Automatic single and multiple sided blotting
- Single sided sensor blotting
- Fast, easy, and safe filling of the secondary cryogen with the unique liquifying head
- Controllable secondary cryogen temperature
- Environmental chamber with adjustable temperature and humidity
- Intuitive control via touch panel

EM AFS2
Freeze substitution and low temperature embedding for light and electron microscopy.

- Temperature range from -140 °C to +70 °C
- Transfer function – LN_2 gas regulation in the chamber to minimize contamination
- LED UV polymerization
- Stereomicroscope viewing

EM FSP
Automatic reagent handling / dispensing system for freeze substitution and PLT.

- One step preparation
- Flexible built-in UV light for polymerization
- Up to 20 samples per run
- Reduced setup time

EM CTD
Cryo tool dryer

- Combines heated air flow and heating plate for de-icing
- Maximum temperature +50 °C

COATING & FREEZE FRACTURING

EM ACE200
Desk-top coater for homogeneous coatings of conductive metal or carbon. Fully automated instrument. Options include:

- Carbon thread evaporation
- Sputtering
- Both methods with interchangeable heads
- Quartz crystal measurement
- Planetary rotation
- Glow discharge

EM ACE600
Fully automated, versatile high vacuum coater producing very thin, fine-grained, conductive metal and carbon coatings. Up to two angled coating sources configurable. Designed for high resolution analysis, required in FE-SEM and TEM applications.

- Sputtering
- Carbon thread evaporation
- Carbon rod evaporation
- E-beam evaporation
- Glow discharge
- 104 mm automated rotating stage with planetary option
- EM VCT500 option for cryo-coating, freeze-fracture, double-replica, and controlled environmental transfer

The EM ACE600 outfitted with EM VCT500 is the ideal solution for contamination-free cryo-SEM sample preparation with complete environmental control.

EM ACE900
High-end system for freeze fracture applications. High vacuum, a 3-axis movable microtome, and low angle e-beam coating with rotation ensure the best results for TEM replicas. EM VCT500 option ensures contamination-free cryo-SEM block face imaging.

- Large, closed cryo-shield
- Rotating cryo stage
- High resolution low angle e-beam coating of carbon / metal
- Gate valves for e-beam sources and load lock (sample and knife exchange)
- EM VCT500 option

TISSUE PROCESSING

EM TP
Automated tissue processor for LM and EM sample preparation.

- Programming of all processing steps
- Integrated touch-screen-based software
- Consistent, reproducible performance
- Processing of multiple tissues in one run
- Environmental conditions maintained during preparation

CONTRASTING

EM AC20
Automatic contrasting of ultrathin sections for electron microscopy.

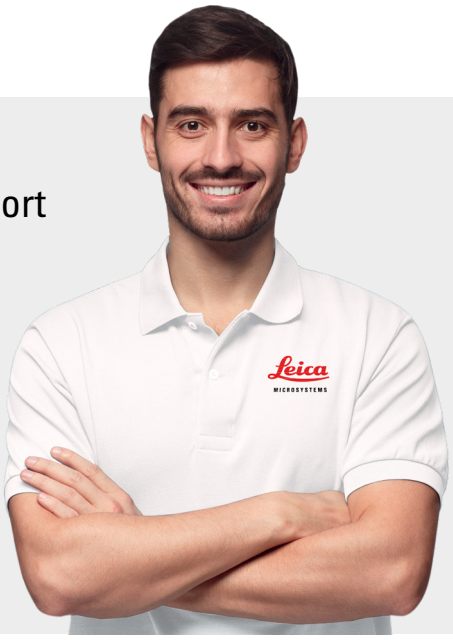
- 60 runs per one set of Ultrostains
- Low reagent consumption
- High contrast

CRITICAL POINT DRYING

EM CPD300
Critical point dryer for biological (pollen, tissue, plants and insects) and industrial (Micro Electro Mechanical Systems (MEMS), hydro or aerogels) samples.

- Reduced process times by Leica filler / sample holder concept
- Minimized CO_2 consumption and minimal user interaction time
- Integrated waste separator prevents direct contact with chemical waste

WHY LEICA SERVICE?



Enabling your success with complete workflow support

Keep your operations running around the globe with best-in-class services entirely dedicated to microscopy and over 170 years of history.

Key features

- Leica Team: 500+ Service & Application experts
- Leica Training: 4-level factory certification program
- Leica Logistics: 5 regional hubs for genuine parts
- Leica One*Call*: PhD-level hotline assistance

CONNECT WITH US!

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