MEETING THE CHALLENGES OF EM SAMPLE PREPARATION

THE LEICA NANOTECHNOLOGY PRODUCT PORTFOLIO

The 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

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CONCENTRATING ON WORKFLOW SOLUTIONS, WE PROVIDE A PRODUCT RANGE THAT IS ALIGNED TO YOUR NEEDS IN TEM, SEM, LM, AND AFM INVESTIGATIONS.
## TRIMMING & MECHANICAL PREPARATION

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<th>Equipment</th>
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<td><strong>EM TXP</strong></td>
<td>Target preparation device for milling, sawing, drilling, grinding and polishing samples prior to examination by SEM, TEM and LM techniques. A perfect system to pre-prepare the sample prior to the ion beam milling techniques.</td>
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<td><strong>EM RAPID</strong></td>
<td>Advanced specimen trimming device for TEM, SEM, LM.</td>
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<td><strong>EM TRIM2</strong></td>
<td>Specimen trimming device for TEM, SEM, LM.</td>
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## ION BEAM MILLING

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<td><strong>EM TIC 3X</strong></td>
<td>The Triple Ion Beam Milling System allows production of cross sections and planed surfaces for SEM microstructure analysis (EDS, WDS, Auger, EBSD) and AFM investigations.</td>
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<td><strong>EM RES102</strong></td>
<td>Unique ion beam milling device with two modified saddlefield ion sources of variable ion energy for optimum results. It combines the preparation of TEM, SEM, and LM samples in a single benchtop unit.</td>
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<td><strong>EM VCT500</strong></td>
<td>Option for environmentally sensitive and cryogenic sample transfer.</td>
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- **EM TXP**
  - Accurate location and preparation of microtargets
  - In-situ stereomicroscope observation
  - Automatic process control to produce a mirror-like surface quality
- **EM RAPID**
  - 0.5, 1, 10, 100 µm step advance
  - Adjustable cutting speed 300–20,000 rpm
  - Advance indication on LCD display
- **EM TRIM2**
  - 1 µm step advance
  - Perpendicular viewing of the sample
  - LED illumination
  - Cutting speed 20,000 rpm
- **EM TIC 3X**
  - Broad and deep cross sections as well as uniform large area milling
  - Interchangeable stages – Standard stage, Multiple sample stage, Cooling stage, Rotary stage
  - EM VCT500 option for environmentally sensitive and / or cryogenic sample transfer
- **EM RES102**
  - External control of the milling process via LAN
  - Preparation of samples up to 25 mm diameter
  - Fully computer-controlled milling parameters

The EM TIC3X outfitted with an EM VCT500 docking station is the ideal solution for environmentally sensitive sample and / or cryogenic sample transfer.
**ULTRA MICROTOMY & CRYO-ULTRA MICROTOMY**

**EM UC7**
Ultramicrotome for ultrathin sectioning of biological and industrial samples.
- Knife usage monitoring
- Feed range from 1 mm up to 15 µm
- Fully motorized knife stage and AutoTrim function
- Vibration decoupled gravity stroke

**EM FC7**
Low temperature ultrathin cryosectioning of biological and industrial samples. Can be mounted on the EM UC7 and the ARTOS 3D.
- Temperature range from +110°C to -185°C
- Individual temperature settings of specimen, knife, and gas
- Easy section collection using micromanipulator and EM CRION ionizer
- EM VCT500 option for environmentally protected sample transfer

The EM FC7 outfitted with an EM VCT500 transfer port is the ideal solution for environmentally sensitive sample and cryogenic sample transfer.

**ARTOS 3D**
Array Tomography Solution for automatic creation and collection of hundreds of serial-section ribbons ready for array tomography with a SEM.
- Fast setup with programs pre-defined by the user for different section carriers
- Wrinkle-free sorting and positioning of ribbons on the section carrier ready for SEM imaging
- Uses the same small section carrier through the entire workflow from sectioning to imaging
- Also and ideal solution for CLEM as transparent section carriers are available

**EM KMR3**
Balanced-break glass knife maker for producing 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

**SAMPLE TRANSFER**

**EM VCT500**
Versatile vacuum cryo transfer system for contamination-free transfer of specimens between different preparation and analysis instruments.
- Workflow specimen monitoring
- Links workflow from preparation to analysis
- 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.
- All sample transfers from loading under vacuum
- Improved connectivity given by a movable loading sphere, adaptors to the Cryo CLEM and Cryo-TEM transfer holders

**CRYO CLEM**

**EM Cryo CLEM**
The system ensures contamination-free sample transfer and loading from cryo sample preparation instruments to Leica fix stage light microscope. Maintains sample vitrified during cryo imaging.
- Rapid screening of large areas and fast determination of regions of interest in the electron microscope under controlled cryo conditions
- The cryo objective with low working distance (0.28 mm) and with NA 0.9 for high resolution (364 nm) ensures fast and specific localization of target structures 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 (3 x 3) samples
- Automated LN₂ re-filling of the sample storage dewar
- Recovery time between freezing cycles is one minute
- Retrofitable light stimulation 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 sided and multiple sided
- 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.

- –140 °C to +70 °C working range
- Transfer function – LN₂ gas regulation in the chamber to minimize contamination
- LED UV polymerization
- Stereomicroscope viewing
- AFS smart-remote observation of the process and delivery of critical information via SMS

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

- One step preparation
- Safer, convenient handling
- Flexible built-in UV light for polymerization
- Up to 20 samples per run

**EM CTD**
Cryo tool dryer

- Combines heated air flow and heating plate for reliable de-icing
- Maximum temperature +50 °C
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. For high resolution analysis, required for FE-SEM and TEM applications.

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

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

The EM ACE600 outfitted with an 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 and together with the EM VCT500, 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

EM TP
Automated routine tissue processor.

- Pre-heating and pre-cooling of the reagents
- Versatile: EM, EM high throughput, and LM
- The sample carousel holds 24 EM or 12 LM vials

EM AC20
Automatic contrasting of ultrathin sections for electron microscopy.

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

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 CO2 consumption and minimal user interaction time
- Integrated waste separator avoids direct contact with chemical waste