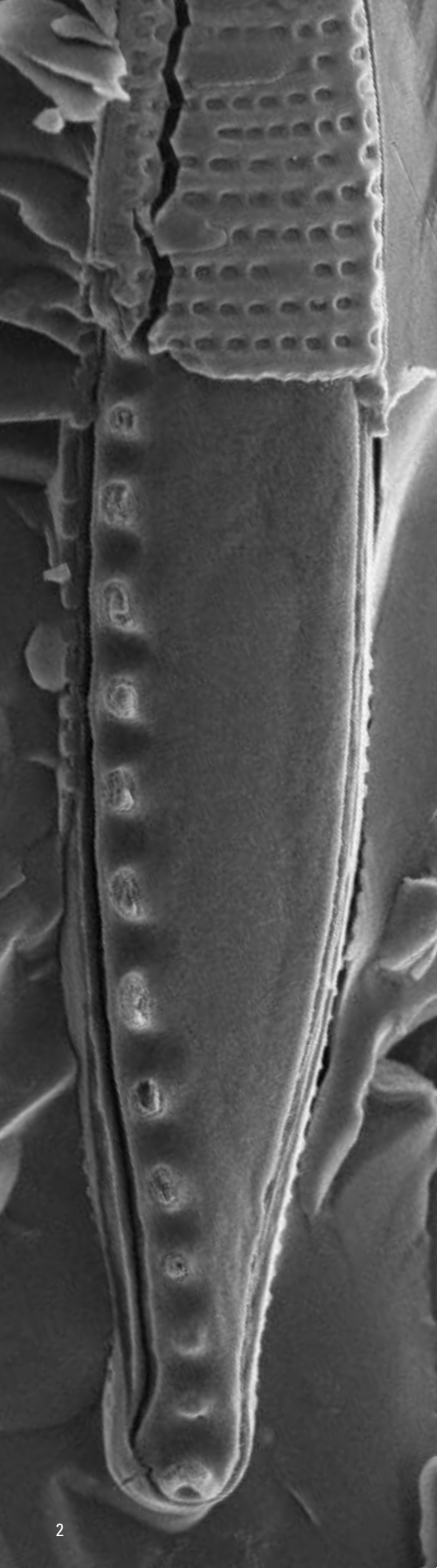

# Systems and Solutions for EM Sample Preparation

The New Product Portfolio from Leica Microsystems

Living up to Life

Leica
MICROSYSTEMS



# EM Sample Preparation – Biological Samples

| | |
|---|---|
| Ultramicrotomy | Leica EM UC7 |
| | Leica EM FC7 |
| | Leica EM KMR3 |
| Contrasting/Labeling | Leica EM IGL |
| | Leica EM AC20 |
| Processing | Leica EM AFS2/EM FSP |
| | Leica EM TP |
| | Leica EM AMW |
| Trimming | Leica EM TRIM2 |
| | Leica EM RAPID |
| Cryo Fixation | Leica EM PACT2/EM RTS |
| | Leica EM HPM100 |
| | Leica EM GP |
| | Leica EM CPC |
| | Leica EM MM80 E |
| Freeze Etching/Freeze Fracture | Leica EM BAF060 |
| | Leica EM MED020 FF |
| Cryo Transfer | Leica EM VCT100 |
| Coating | Leica EM MED020 |
| | Leica EM SCD500 |
| | Leica EM SCD005/SCD050 |
| | Leica EM CED030 |
| | Leica EM QSG100 |
| Drying | Leica EM MED020 FD |
| | Leica EM CPD030 |

## Ultramicrotomy

**Leica EM UC7**

Ultramicrotome for ultrathin sectioning of biological and industrial samples.

- Up to 100 different user/specimen/knife profiles can be set
- Electronic data transfer for reporting user, specimen, knife and storage parameters
- Knife usage monitoring
- Optimized ionizer
- Fully motorized knife stage and AutoTrim function
- Brightness-controlled multi-LED illumination and LED spot illumination

**Leica EM FC7**

Low temperature sectioning system for ultrathin cryosectioning of biological and industrial samples.

- Ergonomic design for fatigue-free operation
- Internal chamber illumination
- Temperature range from –185°C to –15°C
- Individual temperature for specimen, knife and gas
- Setting of temperature difference up to 130°C (between knife and specimen)
- GN2 gap between chamber and arm rest ensures a warm surface for the user to rest on
- Heated chamber walls prevent icing over a prolonged working time
- Easy section collection using micromanipulator and EM Crion ionizer

**Leica 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
- Fast learning curve

## Contrasting/Labeling

**Leica EM IGL**

Automated immunogold labeling system.

- Simultaneous labeling of 24 grids
- Time saving
- Minimized cross contamination

**Leica EM AC20**

Automatic contrasting of ultrathin sections for electron microscopy.

- Safe
- Low reagent consumption
- High contrast
- Reproducible results

## Processing

**Leica EM AFS2**

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

- –140°C to +70°C working range
- Transfer function
- Fast LED UV polymerization
- Intuitive programming with USB port
- Stereomicroscope
- Fume exhaust system
- Mouse-controlled color screen
- Deep freeze to –140°C
- Mobile with clamping wheels

**Leica EM FSP**

An automatic reagent handling/dispensing system for freeze substitution and PLT.

- One step preparation
- Safe and convenient
- Flexible built-in UV light for polymerization
- Up to 20 samples per run

# The New Product Portfolio from Leica

**Leica EM TP**

Automated routine tissue processor.

- Safe
- Time saving
- Reproducible results
- Pre-heat and pre-cool of the reagents
- Versatile: EM, EM high throughput and LM

**Leica EM AMW**

Automatic microwave tissue processor for electron microscopy.

- Fast processing
- Minimum user interface
- From fresh tissue to TEM the same day

## Trimming

**Leica EM TRIM2**

Specimen trimming device for TEM, SEM, LM.

- 1 µ step advance
- Perpendicular viewing of the sample
- LED illumination

**Leica EM RAPID**

Advanced specimen trimming device for TEM, SEM, LM.

- 0.5,1,10,100 µm step advance
- Adjustable cutting speed 300–20000 pm
- Advance indication on LCD display
- Unique system for preparation of tablets for pharma industry as well as for advanced specimen trimming

## Cryo Fixation

**Leica EM PACT2 with EM RTS**

High pressure freezer with rapid transfer system.

- Freezing of specimens, up to 200 µm in thickness and 1.5 mm in diameter without ice crystal damage
- High cooling rates by strong jet of $LN_2$
- Rapid turnaround time
- Compact and mobile
- Automatic bake-out cycle
- Internal memory with download on USB
- Dewar with drain
- Low $LN_2$ consumption
- Low noise
- Suitable for correlative LM/EM

**Leica EM HPM100**

High pressure freezing system for freezing of specimens up to 200 µm in thickness and 6 mm in diameter without ice crystal damage.

- High cooling rates
- No cryo protectant required
- Short handling time before freezing
- Easy one button operation
- Integrated stereomicroscope, LED, workstation
- Dewar with drain
- USB interface for data storage and transfer

**Leica EM CPC**

Universal cryofixation system for immersion and metal mirror cryofixation.

- Versatile
- Easy change of modules
- Schematic display
- Also for use as temperature controlled cryopreparation chamber
- Safety alarm

# Microsystems

**Leica EM GP**

Automatic plunge freezer for the bare grid technique.

- Programming allows reproducible processes in a controlled sample environment
- Filling the secondary cryogen is fast, easy and safe with the unique liquefying head
- Single sided parallel blotting gives an even film thickness

**Leica EM MM80 E**

Metal mirror cryofixation system for impact freezing.

- Gold-coated copper blocks
- Short turnaround time
- Pneumatically damped sample holder

## Freeze Etching/Freeze Fracture

**Leica EM BAF060**

High-end preparation unit, featuring an advanced microtome, flexible shadowing options with electron beam sources and a load-lock transfer system for:

- Freeze fracture/etching
- Double replica (mirror fracturing)
- Freeze drying
- High resolution carbon/metal mix coatings for TEM/SEM analysis
- Double layer coating of specimens for cryo SEM analysis
- Cryo coating for cryo SEM using the EM VCT100

**Leica EM MED020 FF**

Compact and modular freeze fracture/etching system in combination with the EM VCT100.

- High vacuum sputtering or e-beam evaporation capabilities
- Separate chambers for freeze fracturing and coating
- Precise fracturing with automatic knife advance

## Cryo Transfer

**Leica EM VCT100**

Versatile cryo vacuum transfer system which transfers specimens from a preparation unit to an analysis instrument via a shuttle.

- Contamination-free transfer
- Suitable for either room temperature or cryo transfer
- Preparation and analysis can be performed independently
- Light weight and space saving shuttle design offers minimal interference with the analysis instrument – no vibrations

## Coating

**Leica EM MED020**

Modular high resolution coating system for multiple preparation processes: single and triple sputtering, carbon rod, carbon thread plus thermal resistance and electron beam evaporation.

- Optional modules allow cryo preparation methods including freeze fracture, freeze drying, double replica, cryo coating for SEM
- Variety of quality vacuum chambers
- High performance oil-free vacuum and pumping system
- Rotary-planetary-tilting stages

**Leica EM SCD500**

Versatile high vacuum oil-free modular device for sputtering, carbon rod, carbon thread and thermal resistance evaporation.

- Optional modules allow cryo preparation for freeze drying, freeze fracture, double replica, cryo coating and cryo vacuum transfer with the EM VCT100
- Rotary-planetary-tilting stages
- Built-in high voltage etching device

**Leica EM SCD005/SCD050**

Low vacuum sputtering and carbon thread evaporation devices for universal SEM coating.

- Produces fine-grained, quality conductive films
- Stepless height adjustable table
- Large sample coating such as wafers
- Integrated shutter

**Leica EM CED030**

Compact bench top carbon thread evaporation device for producing conductive carbon films on specimens for X-ray microanalysis (EDX, WDX) and carbon reinforcement films on collodion or formvar coated specimen support grids for TEM.

- Simple operation, easy and clean loading
- Single and multiple carbon thread evaporation
- Uniform, cohesive carbon films

**Leica EM QSG100**

Quartz crystal film thickness monitoring system ensures highest reproducibility of sputtered or evaporated layers by precisely measuring film thickness and coating rates.

- Shutter termination for easy and safe replica production
- Programmable layer sequences for multiple coating layers
- Optimized quartz head positioning for exact thickness measurement
- Memory functions: 5 layers with independent thickness values
- Film thickness termination adjustable to 1 nm
- Integrated library for multiple coating materials

## Drying

**Leica EM MED020 FD**

Ideal system for precision controlled freeze drying of SEM samples or TEM cryo sections.

- Reproducible results through exact temperature control of the specimen stage
- Modular design allows transfer of specimens through a counter flow loading device and subsequent coating via sputtering or e-beam evaporation

**Leica EM CPD030**

Critical point drying device for biological and industrial specimens.

- Low $CO_2$ consumption
- Integrated automatic cooling/heating
- Excellent visual access
- Controlled specimen drying
- Adjustable heating parameters
- Precise release of gaseous $CO_2$ after critical point drying

## Solid State Technology

**Leica EM TXP**

Target preparation device for milling, sawing, grinding and polishing.

- Accurate location and preparation of microtargets
- *In-situ* stereomicroscope observation
- Automatic process control to produce a mirror-like surface quality

**Leica EM TIC020**

Slope cutting with the triple ion beam cutter allows accurate and efficient site-specific sample preparation for SEM analysis.

- Cut high quality cross sections from almost any material
- Prepares large samples up to 50 x 50 x 10 mm
- Minimal mechanical pre-preparation required
- High milling rate, broad and deep cuts, using triple ion source

**Leica EM RES101**

Fully computer controlled all in one ion milling system with the highest level of user flexibility to prepare samples for SEM, LM and TEM analysis.

- Variable milling angle from 0° to 90°
- Load-lock system for permanent high vacuum
- Variable ion energy for high and low energy milling processes
- Built-in CCD camera for sample observation
- LAN capability for external operation and monitoring
- Auto-termination

**Leica EM RES120**

Unique SEM controlled ion beam system for TEM, SEM and LM sample preparation offers additional features to the Leica EM RES101.

- High resolution site-specific sample preparation
- Large area milling (25 mm) for SEM, LM
- Sample coating
- Programmable process parameters
- Several detectors e.g. EDX, EBSD (optional) attachable

# EM Sample Preparation – Industrial Samples

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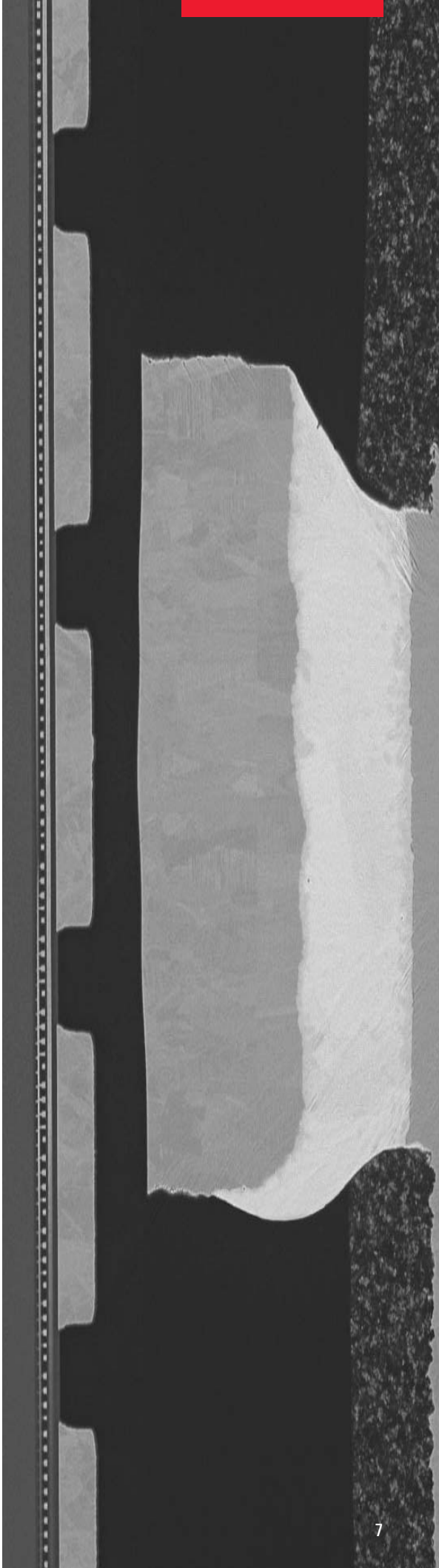
| | Leica EM RES101 |



# “With the user, for the user”
# Leica Microsystems

Leica Microsystems operates globally in four divisions, where we rank with the market leaders.

## • Life Science Division

The Leica Microsystems Life Science Division supports the imaging needs of the scientific community with advanced innovation and technical expertise for the visualization, measurement, and analysis of microstructures. Our strong focus on understanding scientific applications puts Leica Microsystems’ customers at the leading edge of science.

## • Industry Division

The Leica Microsystems Industry Division’s focus is to support customers’ pursuit of the highest quality end result. Leica Microsystems provide the best and most innovative imaging systems to see, measure, and analyze the microstructures in routine and research industrial applications, materials science, quality control, forensic science investigation, and educational applications.

## • Biosystems Division

The Leica Microsystems Biosystems Division brings histopathology labs and researchers the highest-quality, most comprehensive product range. From patient to pathologist, the range includes the ideal product for each histology step and high-productivity workflow solutions for the entire lab. With complete histology systems featuring innovative automation and Novocastra™ reagents, Leica Microsystems creates better patient care through rapid turnaround, diagnostic confidence, and close customer collaboration.

## • Surgical Division

The Leica Microsystems Surgical Division’s focus is to partner with and support surgeons and their care of patients with the highest-quality, most innovative surgical microscope technology today and into the future.

The statement by Ernst Leitz in 1907, “with the user, for the user,” describes the fruitful collaboration with end users and driving force of innovation at Leica Microsystems. We have developed five brand values to live up to this tradition: Pioneering, High-end Quality, Team Spirit, Dedication to Science, and Continuous Improvement. For us, living up to these values means: **Living up to Life**.

## Active worldwide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