

MIRA

<b>Resolution</b> In high vacuum mode (SE)	1.0 nm at 30 kV 2.0 nm at 3 kV	1.2 nm at 30 kV 2.5 nm at 3 kV	1.0 nm at 30 kV 2.0 nm at 3 kV	1.2 nm at 30 kV 2.5 nm at 3 kV
In low vacuum mode (SE)	–	–	1.5 nm at 30 kV (LVSTD) 3.0 nm at 30 kV (LVSTD)	1.5 nm at 30 kV (LVSTD) 3.0 nm at 3 kV (LVSTD)
In high/low vacuum mode (BSE)	2.0 nm at 30 kV	2.0 nm at 30 kV	2.0 nm at 30 kV	2.0 nm at 30 kV
<b>Working vacuum</b> Chamber – High vacuum mode Chamber – Low vacuum mode Gun vacuum	< 1 x 10 <sup>-2</sup> Pa – < 1 x 10 <sup>-6</sup> Pa	< 1 x 10 <sup>-2</sup> Pa – < 1 x 10 <sup>-6</sup> Pa	< 1 x 10 <sup>-2</sup> Pa 7 – 150 Pa < 1 x 10 <sup>-6</sup> Pa	< 1 x 10 <sup>-2</sup> Pa 7 – 150 Pa < 1 x 10 <sup>-6</sup> Pa
<b>Electron optics working modes</b> High vacuum mode Low vacuum mode	Resolution, Depth, Field, Wide Field, Rocking Beam –		Resolution, Depth, Field, Wide Field, Rocking Beam Resolution, Depth	
<b>Magnification</b>	4x to 1,000,000x in Continual Wide Field / Resolution Mode			
<b>Accelerating voltage</b>	200 V to 30 kV			
<b>Electron gun</b>	High brightness Schottky emitter			
<b>Probe current</b>	2 pA to 40 nA			
<b>Scanning speed</b>	From 160 ns to 10 ms per pixel adjustable in steps or continuously			
<b>Focus window</b>	Shape, size and position continuously adjustable			
<b>Scanning features</b>	Dynamic Focus, Point & Line Scan, 3D Beam			
<b>Image size</b>	Up to 8,192 x 8,192 pixels, adjustable separately for live images (in 3 steps) and for saved images (in 10 steps), for square and rectangular 4:3 or 2:1 image shapes.			
<b>Microscope control</b>	All microscope functions are PC controlled by means of the keyboard, the mouse and the trackball, via the program MiraTC, using the Windows™ platform			
<b>Remote control</b>	Via TCP / IP			
<b>Automatic procedures</b>	The Probe Current and Spot Size continuously adjustable by unique In-Flight Beam Tracing™, Vacuum control, Gun Alignment, Centering of Resolution mode, Compensation for kV, Probe Current optimized for Spot Size, Spot Size optimized for Magnification, Scanning Speed, Brightness & Contrast, Focusing & Stigmator, Look up Table.			
<b>UPS</b>	UPS 2kW is standard part of delivery scope			

Requirements

<b>Installation requirements</b>	Power 230 V/50 Hz or 120 V/60 Hz, 2200 VA No water cooling. Compressed dry nitrogen for venting: 150 – 500 kPa Compressed air: 450 – 600 kPa
<b>Environmental requirements</b>	Temperature of environment: 17 – 24 °C Relative humidity: max. 80 % Vibrations: Passive isolation: < 5 µm/s below 30 Hz; < 10 µm/s above 30 Hz Active isolation (option): < 10 µm/s below 30 Hz; < 20 µm/s above 30 Hz Acoustic: < 60 dBC Background magnetic field: synchronous max. 3 x 10 <sup>-7</sup> T asynchronous max. 1 x 10 <sup>-7</sup> T System dimensions: 2.15 m x 1.25 m Room for installation: min. 3 m x 3 m

Software

Measurement	●
Image Operation	●
Image Processing	●
3D Scanning	●
Hardness	●
Multi Image Calibrator	●
Object Area	●
Print Magnification	●
Switch-Off Timer	●
Tolerance	●
Morphology	○
Particle Analysis	○
Image Snapper	○
Sample Observer	○
Draw Beam	○
Mouse Link	○

LM

●
●
●
●
●
●
●
●
●
○
○
○
○
○
○

● standard, ○ option

Wide Field Optics™ and In Flight Beam Tracing™ are trademarks of TESCAN, s.r.o.  
Windows™ is a trademark of Microsoft Corporation.  
We are constantly improving the performance of our products, so all specifications are subject to change without notice.



**TESCAN, s.r.o.**  
Libušina třída 21, 623 00 Brno, CZ  
tel. +420 547 130 411, fax +420 547 130 415  
e-mail: info@tescan.cz  
[www.tescan.com](http://www.tescan.com)

Distributor

MIRA LM



High Resolution Schottky FE SEM with a Large Chamber and a Motorized Compucentric Stage

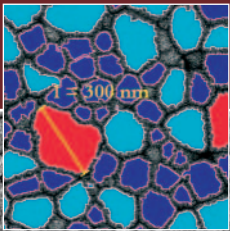




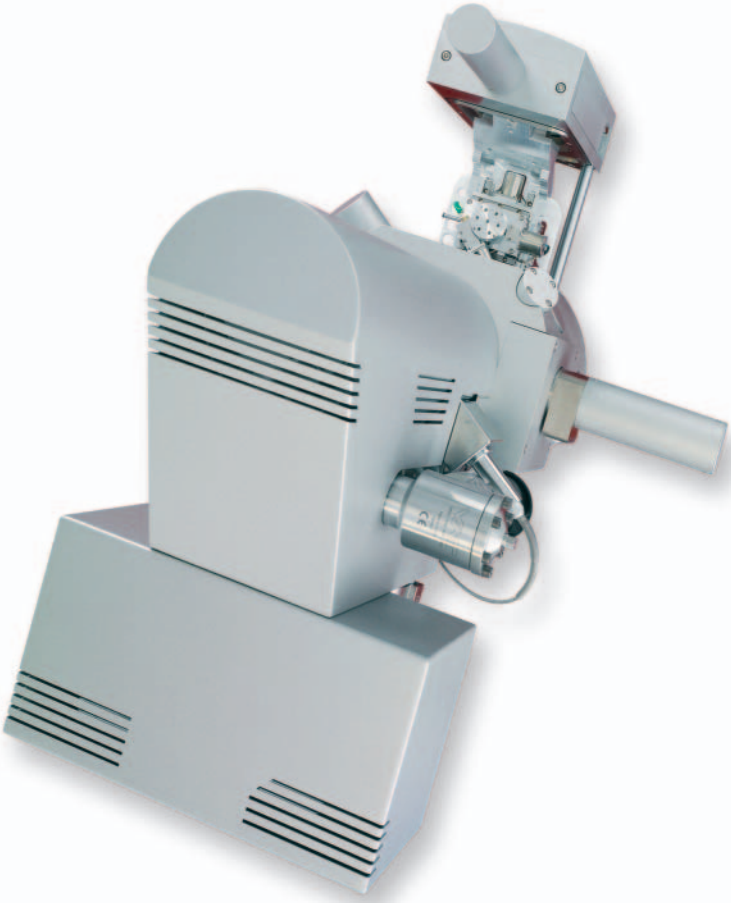
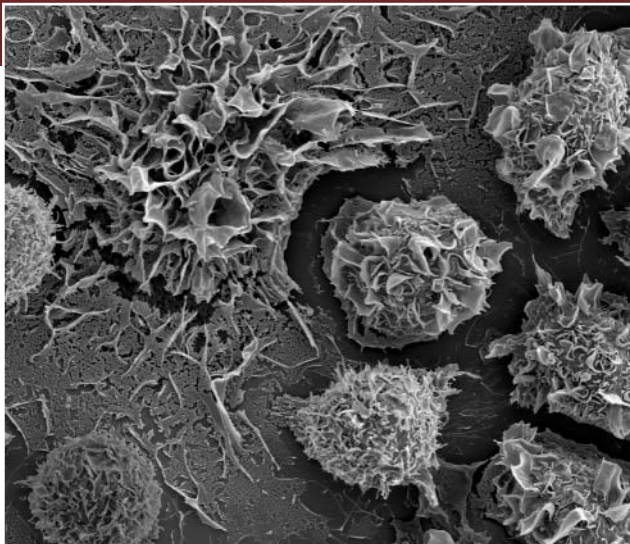
# MIRA\\LM

The MIRA\\ LM belongs to the Mira series of high performance scanning electron microscopes equipped with a Schottky field emission electron gun.

Application in material science:  
Morphology of nanocrystalline Zirconia



Application in microbiology: Cells grown on a glass slide



### Features of the Mira FE SEM series

- A high brightness Schottky emitter for high-resolution/high-current/low-noise imaging
- A powerful **In-Beam Detector** for high resolution imaging especially at low accelerating voltages
- A unique three-lens **Wide Field Optics™** design offering a variety of working and displaying modes embodying the Tescan proprietary Intermediate Lens for the beam aperture optimization
- Real time **In-Flight Beam Tracing™** for the performance and spot optimization integrating the well established Electron Optical Design software
- Fast imaging rate
- Fully automated microscope set-up including electron optics set-up and alignment
- Sophisticated software for SEM control, image acquisition, archiving, processing and analysis
- All network operations and built-in remote access/diagnostics come as a Tescan standard

### Features of the LM chamber model

- 11 chamber interface ports with optimized geometry for EDX, WDX, EBSD
- High-throughput large-area automation, e.g. automated particle location and analyses
- A fully integrated active vibration isolation as an option
- 5 axes fully motorized compucentric stage with extended range of movements

#### Chamber LM

Internal diameter	Ø 230 mm
Door width	148 mm
Number of ports	11
Chamber suspension	pneumatic or optionally active vibration isolation

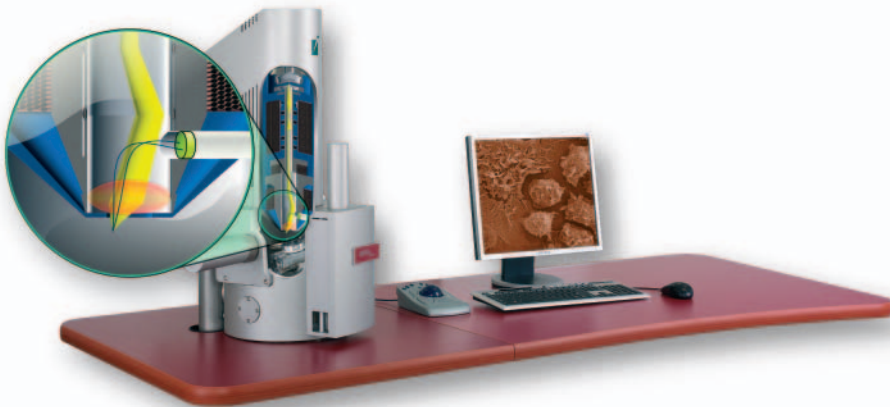
#### Specimen stage

Type	compucentric
Movements	Fully motorized: X = 80 mm, Y = 60 mm, Z = 47 mm Rotation: 360° continuous Tilt: -75° to + 50° *
Specimen height	maximum 60 mm

\* from WD 15 mm and for the eucentric height of the specimen

Ingenious port geometry allows the attaching of a large variety of detectors and makes MIRA\\ LM microscope with an extraordinary analytical potential.

### In-Beam Detector



### MIRA\\

MIRA\\ is equipped with a selected combination of premium detectors as a standard. It is a suitable tool for demanding applications where the highest resolution at big magnifications and low accelerating voltages is required.

### MIRA\\ CS

MIRA\\ CS with a standard set of detectors and a great analytical potential offers a **compact solution** for a wide range of technical applications.

#### Detectors

	LMH	LMH-CS	LMU	LMU-CS
In-Beam SE detector	●	–	●	–
SE detector	●	●	●	●
Retractable BSE detector	●	○	●	●
LVSTD	–	–	○	○
TE detector	○	○	○	○
CL detector	○	○	○	○
EBIC	○	○	○	○
EDX*	○	○	○	○
WDX*	○	○	○	○
EBSD*	○	○	○	○

#### Accessories

Probe current measurement	●	●	●	●
Touch alarm	●	●	●	●
Chamber view camera	●	●	●	●
Peltier cooling stage	○	○	○	○
Active vibration isolation	○	○	○	○
Magnetic field cancelling system*	○	○	○	○
Beam blanker	○	○	○	○
Nanomanipulators*	○	○	○	○

\* fully integrated third party products  
● standard, ○ option, – not available

### MIRA\\ LMH

A large chamber model with an extended motorized manipulator operates at a high vacuum for investigation of conductive samples with extraordinary imaging quality.

### MIRA\\ LMU

A variable pressure FE SEM that supplements all the advantages of the high vacuum model with extended facilities for low vacuum operations, allowing investigation of nonconductive specimens in their natural uncoated state.