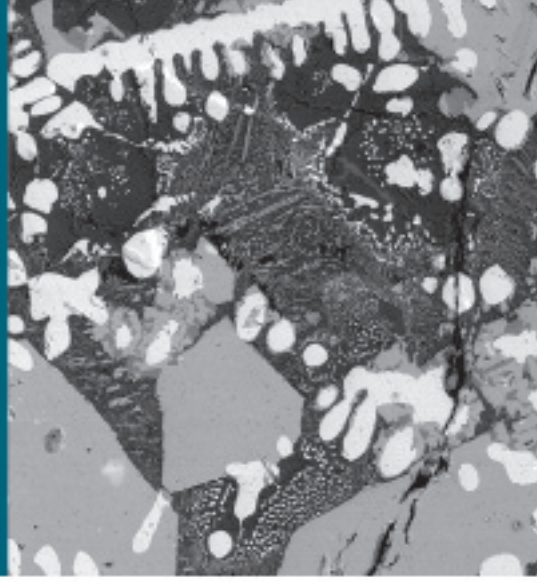
VEGA\\ XM



Analytical Scanning Electron Microscope with an Extra Large Chamber and an Extended Motorized Stage

TESCAN

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VEGA\\ XM

The VEGA\\ XM belongs to the Vega series of Tungsten heated cathode SEMs. With its extra large chamber and robust motorized stage it is suitable for demanding professional solutions in industry as well as in research.

Features of Vega SEM series

- A unique four-lens **Wide Field Optics™** design offering the variety of working and displaying modes embodying the Tescan proprietary Intermediate Lens for the beam aperture optimization
- A comprehensive choice of detectors and accessories
- A fast and easy obtaining of the clean chamber vacuum by powerful turbomolecular and rotary fore vacuum pumps
- Network operations and built-in remote access/diagnostics, all come as a Tescan standard

Features of XM chamber model

- An extra large chamber is able to accommodate specimens with the diameter of about 280 mm
- 5-axis fully motorized compucentric stage with extra wide range of movements
- Fast and precise movements with possibility to recall saved positions
- A robust stage is capable of holding samples up to 8 kg (17.6 lb) of weight
- 9⁺ chamber interface ports and comprehensive choice of detectors and accessories like EDX, WDX, EBSD etc.
- A pneumatic or optional active vibration isolation ensures reducing the influence of ambient vibration

VEGA\\ XMH

This high vacuum model is suitable for a wide range of technical applications where conductive materials are investigated.

VEGA\\ XMU

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

Chamber XM

Internal size	300 mm (width) x 330 mm (depth)
Door	280 mm (width) x 310 mm (height)
Number of ports	9⁺
Chamber suspension	pneumatic or optionally active vibration isolation

Specimen stage

Type	compucentric
Movements *	Fully motorized: X = 130 mm , Y = 130 mm , Z = 100 mm Rotation: 360° continuous Tilt: -20° to +90°
Specimen height	maximum 143 mm

+ Standard number and configuration of ports can be modified to customers needs.
* Range of the manipulator movements can be different for particular detector configuration.

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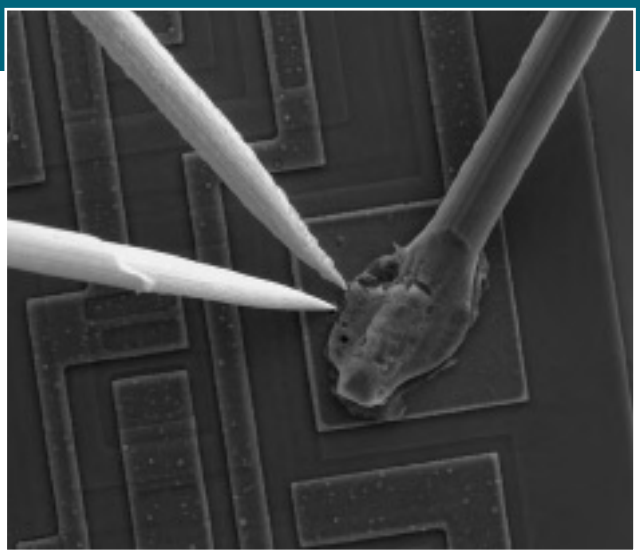
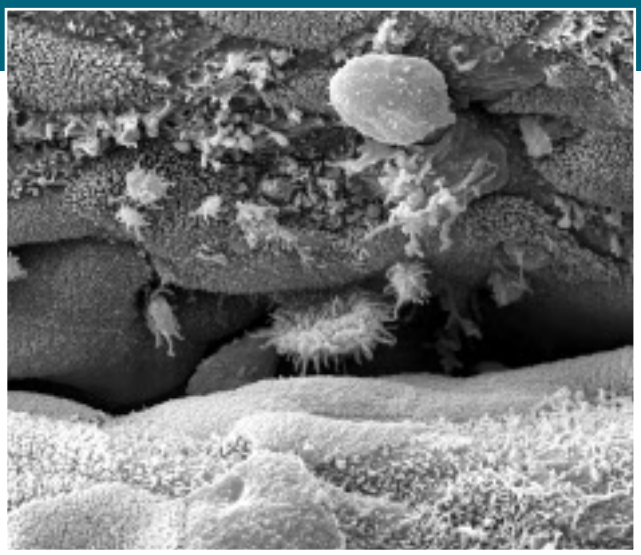
Application in electrotechnics: Measuring electric resistance on an IC with the use of nanomanipulators by Kleindiek Nanotechnik.

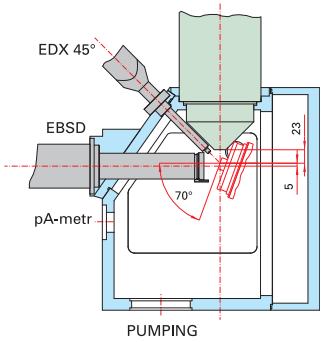


Application in medicine: Investigation of hamster intestine. The sample was prepared using a critical point drying method and gold coated.

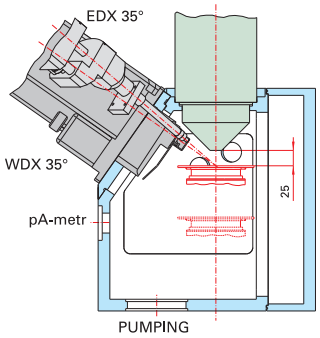


Ingenious port geometry with modifiable flanges allows attaching a variety of detectors and accesories and makes VEGA\\ XM microscope an extraordinary analytical tool.

side view

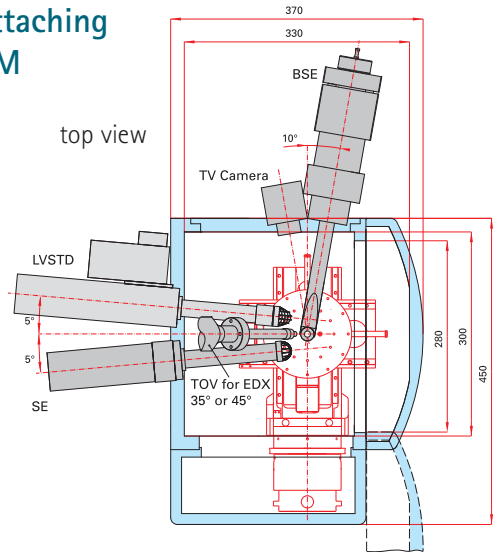


Simultaneous EDX & EBSD

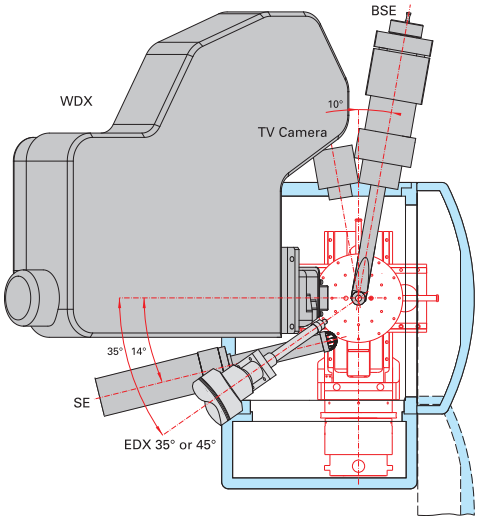


Simultaneous EDX & WDX

top view



top view



Detectors	XMH	XMU
SE – ET type detector	●	●
Fixed BSE detector	○	-
Retractable BSE detector	○	●
LVSTD	-	○
TE detector	○	○
EBIC	○	○
CL detector	○	○
EDX *	○	○
WDX *	○	○
EBSD *	○	○

Accessories		
Probe current measurement	●	●
Touch alarm	●	●
Chamber view camera	●	●
Active vibration isolation	○	○
Peltier cooling stage	○	○
Beam blanker	○	○
Nanomanipulators *	○	○
Load lock	○	○
Control panel	○	○

* fully integrated third party products
● standard, ○ option

VEGA

	XMH	XMU		
Resolution In high vacuum mode (SE) In medium, low vacuum mode (BSE)	 3.0 nm at 30 kV –	 3.0 nm at 30 kV 3.5 nm at 30 kV		
Working vacuum High vacuum mode Medium vacuum mode Low vacuum mode	 < 1 x 10^{-2} Pa – –	 < 1 x 10^{-2} Pa 3 – 150 Pa 3 – 500 Pa (optionally 2000 Pa)		
Electron optics working modes	Resolution, Depth, Wide Field, Field, Rocking Beam	**High Vacuum** Resolution, Depth, Wide Field, Field, Rocking beam	**Medium Vacuum** Resolution, Depth, Wide Field, Field, Rocking beam	**Low Vacuum** Resolution Depth
Magnification	Continuous from 3x to 1,000,000x			10x - 1,000,000x
Accelerating voltage	200 V to 30 kV			
Electron gun	Tungsten heated cathode			
Probe current	1 pA to 2 μA			
Scanning speed	From 160 ns to 10 ms per pixel adjustable in steps or continuously			
Focus window	Shape, size and position continuously adjustable			
Scanning features	Dynamic focus, Point & Line scan, Tilt correction, 3D Beam			
Image size	Up to 8,192 x 8,192 pixels in 16-bit quality, size is 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.			
Microscope control	All microscope functions are PC controlled by means of the trackball, the mouse and the keyboard via the VegaTC program using Windows™ platforms. Control pad and touchscreen optionally available.			
Automatic procedures	Vacuum control, Filament heating, Gun Alignment, Centering of Scanning modes, Compensation for kV, Probe Current optimized for Spot Size, Spot Size optimized for Magnification, Scanning Speed, Contrast & Brightness, Focus, Stigmator, Look up Table			
Remote control	Via TCP / IP			

Requirements

Installation requirements	Power 230 V/50 Hz or 120 V/60 Hz, 1300 VA No water cooling. Compressed dry nitrogen is recommended: 150 – 500 kPa Compressed air for suspension: 450 – 600 kPa
Environmental requirements	Temperature of environment: 18 – 28 °C Relative humidity: max. 80 % Vibrations: Passive isolation: < 6 μm/s below 30 Hz; < 12 μm/s above 30 Hz Active isolation (option): < 12 μm/s below 30 Hz; < 24 μm/s above 30 Hz Background magnetic field: synchronous max. 3 x 10^{-7} T, asynchronous max. 1 x 10^{-7} T System dimension: 2.160 m x 1.010 m Room for installation: min. 3 m x 3 m

Software	XMH	XMU
Measurement	●	●
Image Operation	●	●
Image Processing	●	●
3D Scanning	●	●
Hardness	●	●
Multi Image Calibrator	●	●
Object Area	●	●
Print Magnification	●	●
Switch-Off Timer	●	●
Tolerance	●	●
Positioner	●	●
EasySEM	●	●
Morphology	○	○
Particle Analysis	○	○
Image Snapper	○	○
Sample Observer	○	○
DrawBeam	○	○
Mouse Link	○	○
3D Metrology	○	○

● standard, ○ option

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