Focused Ion Beam Scanning Electron microscopy

DB500

DB500 is a Field Emission Scanning Electron Microscope with Focused Ion Beam column for nano-analysis and specimen preparation, which is applied with “Super-Tunnel” electron optics technology-low aberration and magnetic-free objective lens design, with “Low-voltage & High-resolution” ability that ensures its nano-scale analytical capability.

The ion column facilitates a Ga+ liquid metal ion source with highly stable and high quality ion beam to ensure nano-fabrication capability. DB500 is equipped with an integrated nano-manipulator, gas injection system, electrical anti-contamination mechanism for objective lens , and with 24 expansion ports on the specimen chamber, making it an all-around nano-analysis and fabrication platform with comprehensive configurations and expandability.

Features

- **"SuperTunnel" Electron Optics Technology**
- **Gallium Ion Beam**
- **Fully Configured**
- **Gas Injection System**
- **Integrated Manipulator**
- **Excellent Warranty**

01

“SuperTunnel” Electron Optics technology with a magnetic-free objective lens, suitable for high-resolution imaging, and compatible with magnetic specimen imaging

02

The focused ion beam column which outputs a highly stable, high-quality ion beam, suitable for high-quality nano-fabrication and TEM specimen preparation

03

A piezoelectric driven manipulator located inside the specimen chamber with an integrated control system for precise handling

04

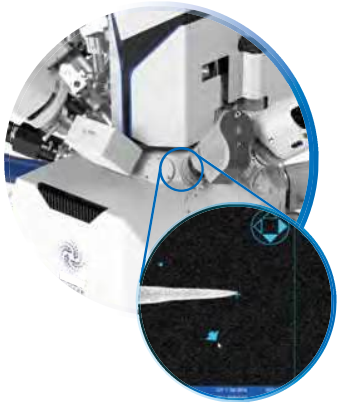
Independently developed system with strong expandability. The integrated ion source assembly design for quick ion source exchange. Excellent service supported by an included three-years warranty

Focused Ion Beam Column

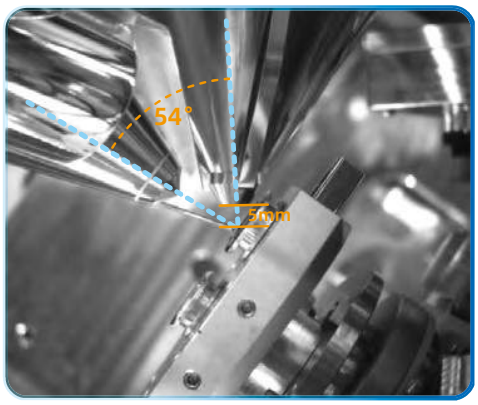
Resolution: 3 nm@30 KV
Probe current: 1 pA~50 nA
Accelerating voltage range: 500 V~30 kV
Ion source exchange interval: ⩾1000 hours
Stability: 72 hours uninterrupted operation

Nano-manipulator

Chamber internally mounted
Three-axis all-piezoelectric driven
Stepper motor accuracy: ⩽10 nm
Maximum travel speed: 2 mm/s
Integrated control system



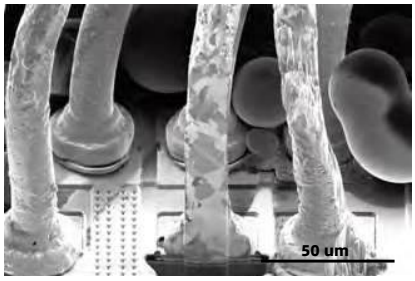
Ion Beam-Electron Beam Collaboration



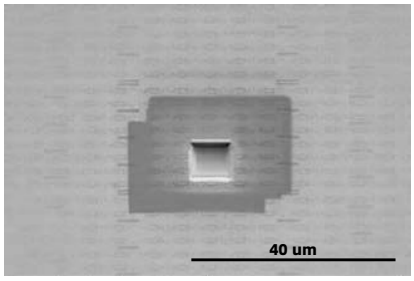
Gas Injection System

Single GIS design
Various gas precursor sources available
Needle insertion distance: ⩾35 mm
Motion repeatability: ⩽10 μm
Heating temperature control repeatability: ⩽0.1°C
Heating range: room temperature ~ 90°C
Integrated control system

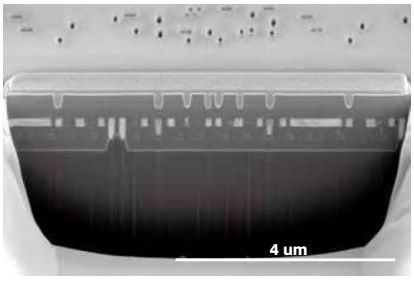
Image Gallery



Gold Wire/30 kV/800X/ETD



IC Chip 1/1 kV/1500X/ETD



IC Chip 2/1 kV/15000X/ETD

Specifications

Electron Optics	Electron gun	High Brightness Schottky Field Emission Electron Gun
	Resolution	0.9 nm@15 kV；1.6 nm@1.0 kV
	Acceleration voltage	20 V ~ 30 kV
Ion Beam System	Ion source	Gallium
	Resolution	3 nm@30 kV
	Acceleration voltage	500 V ~ 30 kV
Specimen Chamber	Vacuum system	Fully Automated, Oil-Free Vacuum System
	Camera	Three cameras （Optical navigation X1 + chamber monitoringx2）
	Stage Type	Motorized 5-axis mechanical eucentric specimen stage
	Stage Travel range	X=110 mm，Y=110 mm，Z=65 mm T: -10°~+70°，R: 360°
Detector&Optional	Standard	In-lens Electron Everhart-Thornley Detector（ETD）
	Optional	Retractable Back-Scattered Electron Detector（BSED） Scanning Transmission Electron Microscopy Detector（STEM） Energy Dispersive Spectrometer（EDS） Electron Backscattered Diffraction Pattern（EBSD ） Nano-manipulator Gas injection Plasma cleaner Specimen exchange loadlock Trackball & Knob Control Panel
User interface	Operation System	Windows
	avigation	Optical navigation, gesture quick navigation
	Automatic Functions	Auto brightness & contrast, auto focus, auto stigmator