High Speed
Scanning Electron Microscope
HEM6000

HEM6000 is a high-speed scanning electron microscope that can cover large volume specimen imaging across scales.

It facilities technologies such as high-brightness large-beam current electron gun, high-speed electron beam deflection system, high-voltage sample stage deceleration, dynamic optical axis, and immersion electromagnetic & electrostatic combo objective lens to achieve high-speed image acquisition whilst ensuring nano-scale resolution.

The automated operation process is designed for application such as a more efficient and smarter large-area high-resolution imaging workflow. The imaging speed can reach more than 5 times faster than a conventional field emission scanning electron microscope.

Image Acquisition Speed
10 ns/pixel，2*100 M pixel/s

Resolution
1.3nm@3kV，SE；1.5nm@1kV，SE
0.9nm@30kV，STEM

Acceleration Voltage
0.1 kV~6 kV (Deceleration Mode)
6 kV~30 kV (Non-deceleration Mode)

Field Of View
Maximum 1*1 mm^2, high-resolution minimum distortion 64*64 um^2

Stage repeatability
X +-0.6 um; Y +-0.3 um

Features

High-Speed Scanning Driver
Dwell time 10 ns/pixel, maximum imaging acquisition speed 2*100M pixel/s

Signal Electron Filtering System
SE/BSE signal free switching, mixing with adjustable ratio

Fully Electrostatic High-Speed Beam Deflection System
High resolution large field imaging achievable
Maximum Field of View up to 32 um*32 um at 4 nm per-pixel

Sample Stage Deceleration Technology
Reduces incident electron landing voltage, whilst increasing signal electron capturing efficiency

Electromagnetic & Electrostatic Combo Immersion Objective Lens Beam Deflection System
Objective lens magnetic field immerses sample, contributes low aberration high resolution imaging

Features

01

High speed automation

Fully automatic sample loading & offloading process and image acquisition operation, which makes the overall imaging speed 5 times faster than that of conventional field emission scanning electron microscopes

02

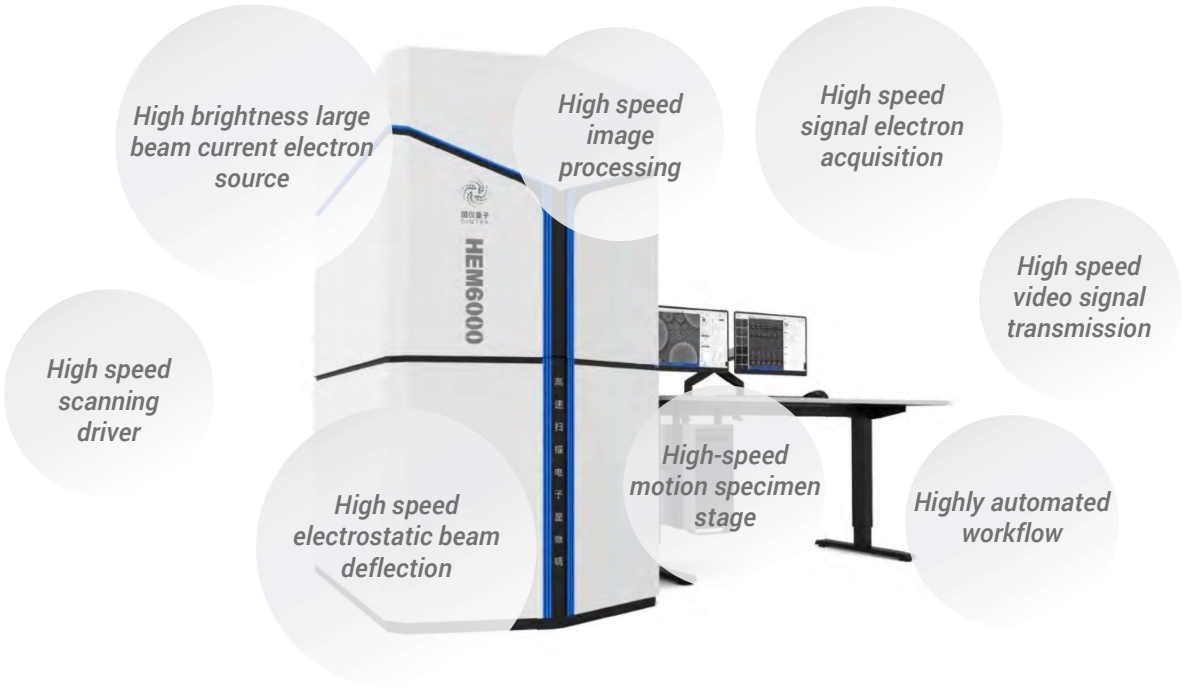
Large field of view

Technology that dynamically shifts optical axis according to the scanning deflection range, achieves minimum edge distortion

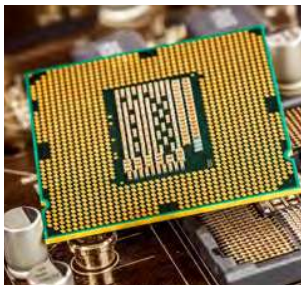
03

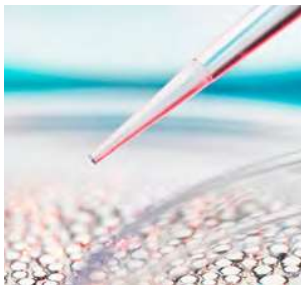
Low imaging distortion

Specimen stage tandem deceleration technology, achieves low landing energy, whilst obtaining high resolution images



Applications


Semiconductor


Biology


Materials


Geology

Specifications

Electron Optics	Resolution		1.3nm@3 kV, SE; 2.2nm@1 kV, SE
			1.9nm @ 3 kV, BSE; 3.3 nm @ 1 kV, BSE
	Accelerating voltage		100 V～6 kV(deceleration mode)
			6 kV～30 kV(none-decel mode)
	Magnification		66～1,000,000x
	Electron gun		High brightness schottky field emission electron gun
	Type of objective lens		Immersion electromagnetic & electrostatic combo objective lens
Sample Loading System	Vacuum system		Fully automatic oil free vacuum system
	Specimen monitoring		Horizontal main chamber monitoring camera; vertical sample exchange loadlock chamber monitoring camera
	Maximum sample size		4 inches in diameter
	Specimen stage	Type	Motorized 3-axis specimen stage (*optional piezoelectric driven specimen stage)
		Travel range	X、Y：110 mm；Z：28 mm
		Repeatability	X：±0.6 μm；Y：±0.3 μm
	Specimen Exchange		Full atutomatic
	Sample exchanging duration		＜15 min
	loadlock chamber cleaning		Fully automatic plasma cleaning system
Image Acquisition and Processing	Dwell time		10 ns/pixel
	Acquisition speed		2*100 M pixel/s
	Image Size		8K*8K
Detector & Accessories	Standard configuration		In-lens electron detector
	Optica configuration		Low angle backscattered electron detector
			In-column High-angle backscattered electron detector
			Piezoelectric driven specimen stage
			High resolution large FOV mode(SW)
			Loadlock chamber plasma cleaning system
			6-inch specimen loading system
			Active anti-vibration platform
			AI noise reduction; large area field stitching; 3D reconstruction
User Interface	Language		Chinese/English
	OS		Windows
	Navigation		Optical navigation, gesture navigation
	Automatic function		Auto sample recognition, auto imaging area selection, auto brightness & contrast, auto focus, auto stigmator