Hitachi High-Tech

News Release

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Hitachi High-Technologies Launches the Most Advanced Ion-Milling System ArBlade 5000

A Hybrid Ion-Milling System Capable of High-Speed, Wide-Area Material Processing

Tokyo, Japan, April 25, 2017—Hitachi High-Technologies Corporation (TSE: 8036, Hitachi High-Tech) announced that it launched sales of the latest evolution, the Hitachi ArBlade 5000 broad ion-milling system, on April 20. This product enables high throughput and prepares wide-area cross-sectional samples.

Ion-milling systems polish the surface of samples using the sputtering effect[*1] caused by the irradiation of an argon ion beam onto the surface. Sample-preprocessing systems are used in research and development, quality control, and related activities in various fields such as electronics and advanced materials.

Unlike mechanical polishing, ion-milling systems process samples without deforming or applying mechanical stress.[*2] As a result, ion-milling systems used to preprocess samples have found an expanded scope of application, including not only Scanning Electron Microscopy (SEM), but also Scanning Probe Microscopy/Atomic Force Microscopy (SPM/AFM) and others. The multitude and wide range of applications applied to ion-milling systems, users in a variety of fields have provided critical suggestions and improvements to be made in the throughput of these systems which are now incorporated into the latest design platform.

The newly launched ArBlade 5000 features a hybrid milling function capable of cross-sectional milling[*3] and flat milling,[*4] which is an exclusive hallmark in the series of Hitachi ion-milling systems. This functionality enables samples to be preprocessed according to a required purpose and application.

The ArBlade 5000 also features PLUS II Ion Gun technology design, a new argon ion gun that achieves a cross-sectional milling rate of 1 mm/hr or higher (twice as fast as Hitachi High-Tech's IM4000Plus model). The new system enables users to prepare cross sections in a shorter time than before, including hard materials such as ceramics and metals, which tend to require longer processing times.
Additionally, Hitachi High-Tech has developed the all new Wide-Area Cross-sectional Milling Holder to enable cross-sectional milling up to a maximum milling width of 8 mm, thereby making it possible to prepare larger cross-sectional samples than ever before. Through synergies with the next generation argon ion gun, the new ArBlade 5000 will enable the preparation of wide-area cross-sectional samples unlike any other ion-system available in the market.

Hitachi High-Tech expects high volume sales, with deliveries scheduled to begin in September 2017. Under its mid-term management strategy of aiming to be a major global player in analytical instrumentation markets, Hitachi High-Tech will continue to promote development and sales

expansion with strong contributions to technological advancement. In addition, Hitachi High-Tech will respond swiftly to the needs of customers and their applications, working from the customer's perspective as a fast-moving creator of cutting-edge technologies.

*1 Sputtering effect: The effect of molecules and atoms being expelled from the surface of a sample when struck by accelerated ions.
*2 Mechanical stress: The internal resistance of an object to deformation or changes in its dimensions in response to an external force applied to it.
*3 Cross-sectional milling: A method of preparing cross sections of soft materials and composite materials that are difficult to mill through via cutting or mechanical polishing.
*4 Flat milling: A method of resurfacing and finalizing mechanically polished samples (removal of mechanical polishing damage and deformations) and cleaning the surfaces of samples.

Hitachi ion-milling system model "**ArBlade 5000**"

【Main Features】

1. Hybrid milling system capable of both cross-sectional milling and flat milling.
2. Achieves a cross-sectional milling rate of 1 mm/hr or higher through a PLUS II Ion Gun technology design high-rate argon ion gun.
3. Enables wide-area processing with a maximum milling width up to 8 mm through the use of a Wide-Area Cross-sectional Milling Holder.
4. Enhanced operability featuring all-new control systems based on the adoption of an LCD touch panel.

【Main Specifications】

Item		Details
Ion gun (PLUSⅡ)	Gas used	Argon (purity of 99.99% or higher)
	Gas supply	Mass flow controller (Maximum 1 cc/min)
	Accelerating voltage	0～8 kV
	Discharge method	Cold cathode Penning method
Cross-sectional milling		1 mm/hr or higher, Si sample, 100 μm protrusion
Maximum cross-sectional milling width		8mm(with using a wide-area cross-sectional milling holder)
Stage	Cross-sectional milling	7 settings (intermittency is set individually)
	Flat milling	7 settings (intermittency is set individually)
		Tilt range 0-90°
Evacuation system	Main pump	Turbo molecular pump (TMP) (35 L/s)
	Roughing pump	Rotary pump (RP) (135 L/min)
Dimensions of main unit: width x height x depth		620W×312H×725D mm
System weight		Main unit: 52 kg, Rotary pump: 29.5 kg

【Options】

Item	Details
Stereo microscope for viewing the sample during ion milling	Binocular or trinocular zoom stereo microscope (Maximum magnification 100x)

◆Web site

http://www.hitachi-hightech.com/global/product_detail/?pn=em-arblade5000

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