

# Analytical Service Using HD-2700 SEM/STEM

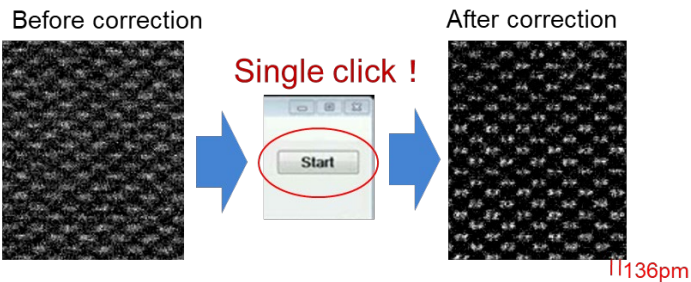
# HITACHI

Hitachi HD-2700 dedicated STEM offers powerful atomic resolution imaging capability with user-friendly operation and automatic Cs corrector alignment for a wide range of users, from beginners to experts. It is a powerful microscope designed for high-throughput and fast-turnaround 24/7 manufacturing environment.



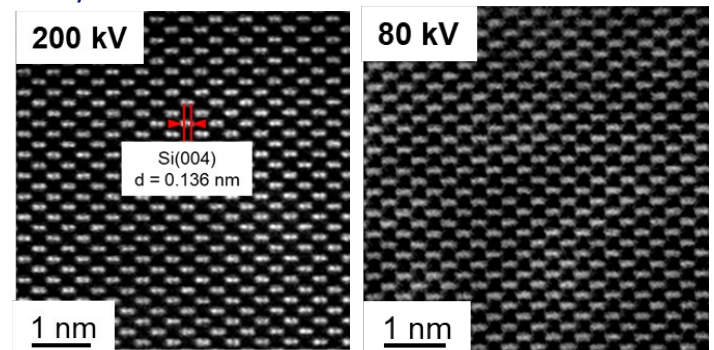
## Automated and User-friendly Operation

Anyone who knows how to operate a SEM can easily obtain atomic resolution STEM imaging, simply by clicking a button to automatically tune the Cs aberration corrector. The control panel and graphic user interface are similar to Hitachi SEM, making the operation is very user-friendly.



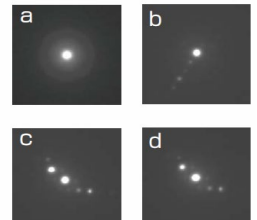
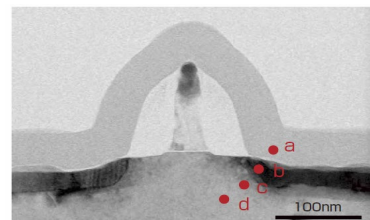
## Ultrahigh Resolution Imaging

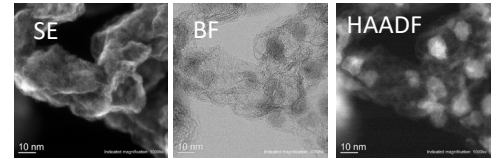
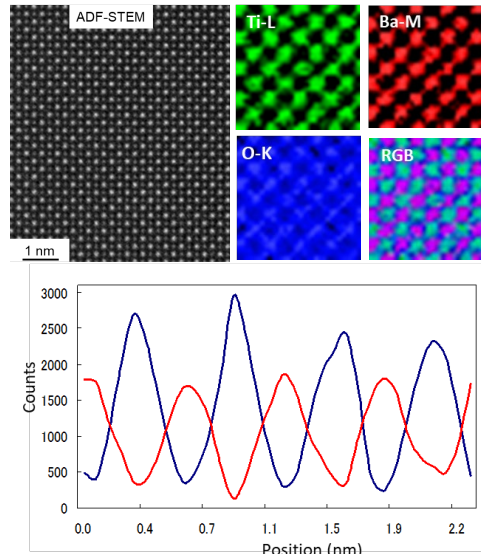
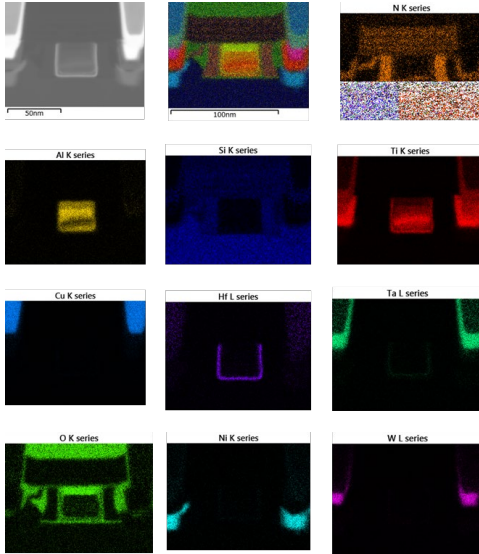
The standard HD-2700 guarantees 0.14 nm resolution in the high angle annular dark-field (HAADF) STEM imaging mode. 0.105 nm information limit is achievable with a high-resolution objective lens pole piece (option).



## Nano Beam Diffraction

Hitachi's live diffraction unit (option) allows acquisition of live electron diffraction pattern from a small area in nanometer resolution and display simultaneously with HAADF STEM image.





## A Wide Variety of Imaging Capabilities

The HD-2700 allows bright-field (BF), high-angle-annular-dark-field (HAADF), secondary electron (SE) imaging, and electron diffraction, as well as imaging at 200 kV, 120 kV and 80 kV.

The BF STEM imaging mode allows imaging of structures on the basis of phase contrast similar to a typical transmission electron microscope imaging.

The HAADF-STEM imaging mode collects high-angle scattered electrons with an annular dark-field detector. The image contrast is proportional to the atomic number (Z-contrast image), therefore composition dependence with respect to the image contrast is obtained.

Secondary electrons generated from the surface and inside of specimen by the incident electron beam are collected utilizing an SE detector for high resolution imaging for surfaces and internal structures.

## High-Sensitivity and High through-put EDS Elemental Analysis Mapping

The 2 100 mm<sup>2</sup> windowless SDD provide a solid angle of 2Sr, enabling high through-put and high sensitivity EDS analysis. With only 2 min acquisition time, high S/N elemental maps (similar to the above data) can be obtained.

## Atomic Column-by-Column Elemental Mapping by EDS and EELS

The ultra fine electron probe with large probe current of HD-2700

equipped with Cs-corrector can visualize the elemental distribution according to the individual atomic columns by using EDS or EELS spectrum imaging method.

## HD-2700 Specifications

<b>Resolution:</b>	0.136 nm (with Cs corrector by HAADF) 0.105 nm (with Cs corrector by FFT)
<b>Electron source:</b>	Schottky emitter, Cold field emitter (option)
<b>Voltage:</b>	200 kV, 120 kV (option), 80 kV (option)
<b>Magnification:</b>	X100 – X10,000,000
<b>Imaging signal:</b>	Bright field STEM (Phase contrast image) Dark field STEM (Z-contrast image) Secondary electron image (SE image) Electron diffraction (option) Characteristic X-ray analysis and mapping (option) EELS analysis and mapping (option)
<b>Stage Movement:</b>	X/Y = $\pm 1$ mm, Z = $\pm 0.3$ mm T = $\pm 30^\circ$ (Single tilt holder)

\*Please note: Currently the HD-2700 is available for analytical service only. Not available for sale.