HITACHI
Inspire the Next

2006

Hitachi 3D TEM

Advantages

Using only one TEM sample, you are able to:

- Perform atomic-resolution imaging and electron diffraction without orientation limit.
- Quick 3D panoramic view for shape, dimension, location, and failure analysis of nanomaterials, nanocatalysts, thin film devices, and biological materials.
- Collect image data in the 0-180^{o} angle range for electron tomography. No artifact for 3D reconstruction because of no missing data.
- 3D EDX and EELS chemical mapping.
- Prepare TEM samples using FIB and move to TEM and STEM instruments for characterization without having to relocate the tiny samples.

System Requirements

TEM: Hitachi transmission electron microscopes

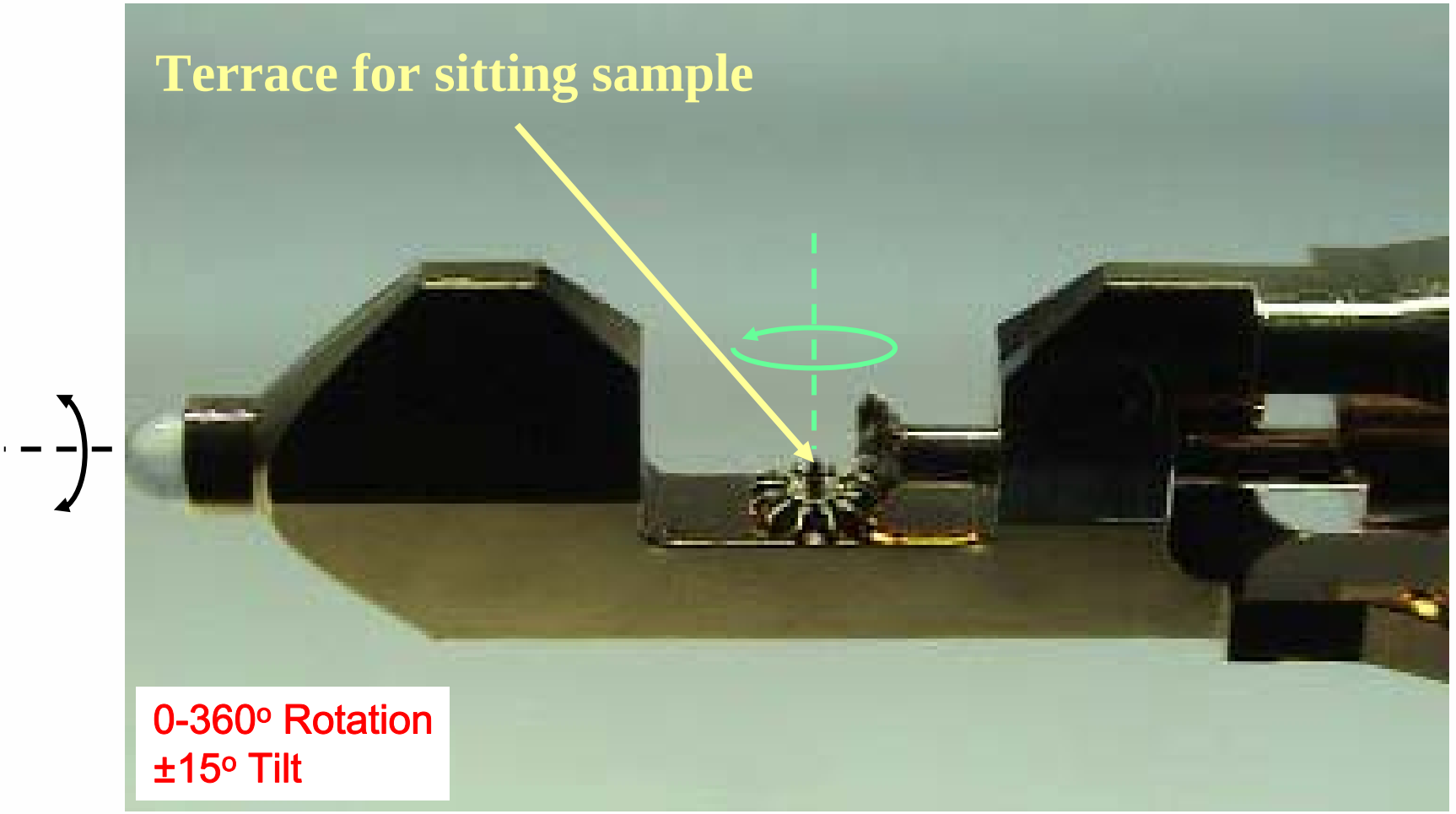
•H-9500	300 kV high-resolution TEM for materials and biological sciences.
•H-7650	120 kV automated TEM for biological and beam-sensitive materials.
•HD-2300	200 kV dedicated STEM for semiconducting industry, materials science and biological science.

*Please find more information at www.hitachi-hta.com

Specimen Holder: Hitachi-patented 3D holder

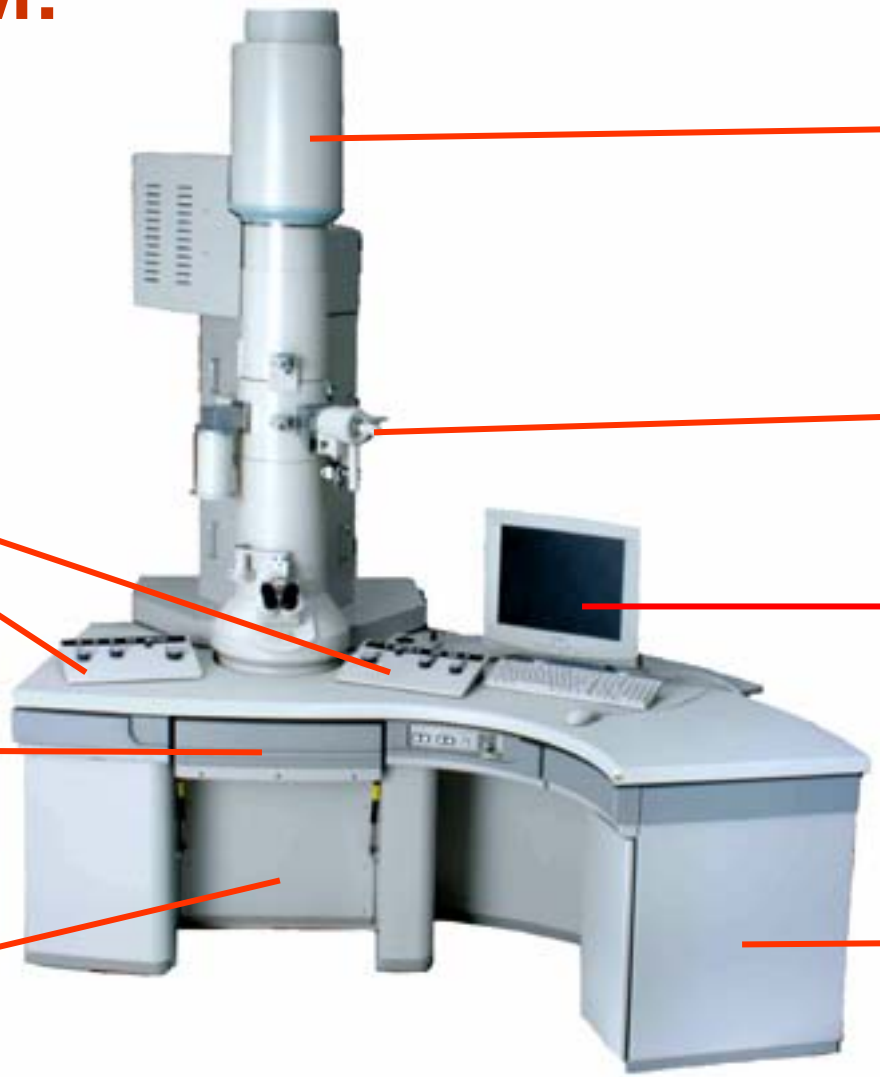
- **•0-360º rotation and ±15º tilt under electron beam**
- •Compatible with Hitachi Focus Ion Beam (FIB) instrument

Hitachi-Patented Sample Holder: 360° Panoramic View



Movie available upon request

Hitachi TEM: H-9500



LaB_6 Electron Source

5-Axis Stage

19” LCD Monitor

Control PC

Operation Panel

Film Camera Chamber

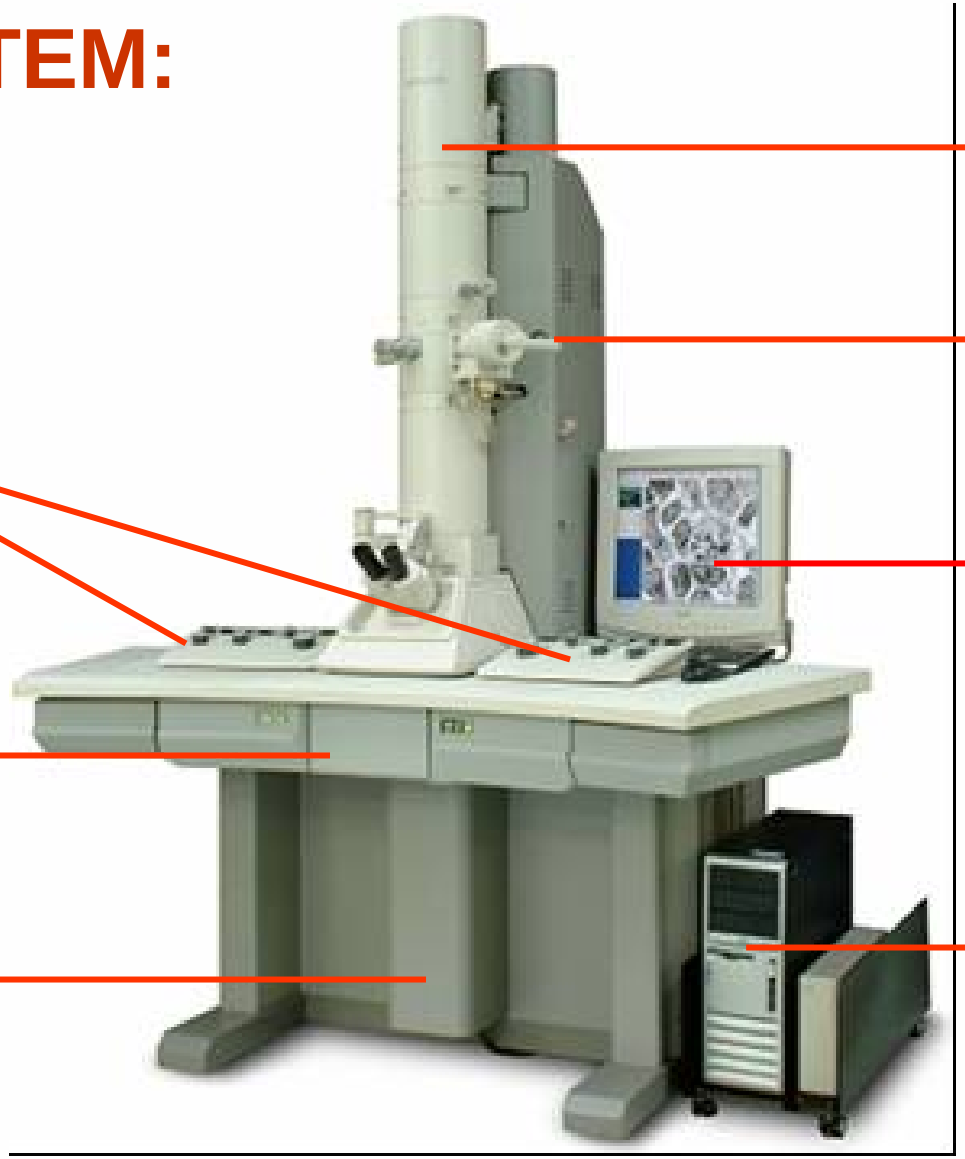
Digital CCD Camera

Special Functions for H-9500 TEM

Option 1: In-situ gas injection-heating, atomic resolution

Option 2: 360^{o}-view structural and chemical analysis

Hitachi TEM: H-7650



W or LaB_6 Electron Source

5-Axis Stage

Operation Panel

19” LCD Monitor

Camera Chamber

Control PC

Digital CCD Camera

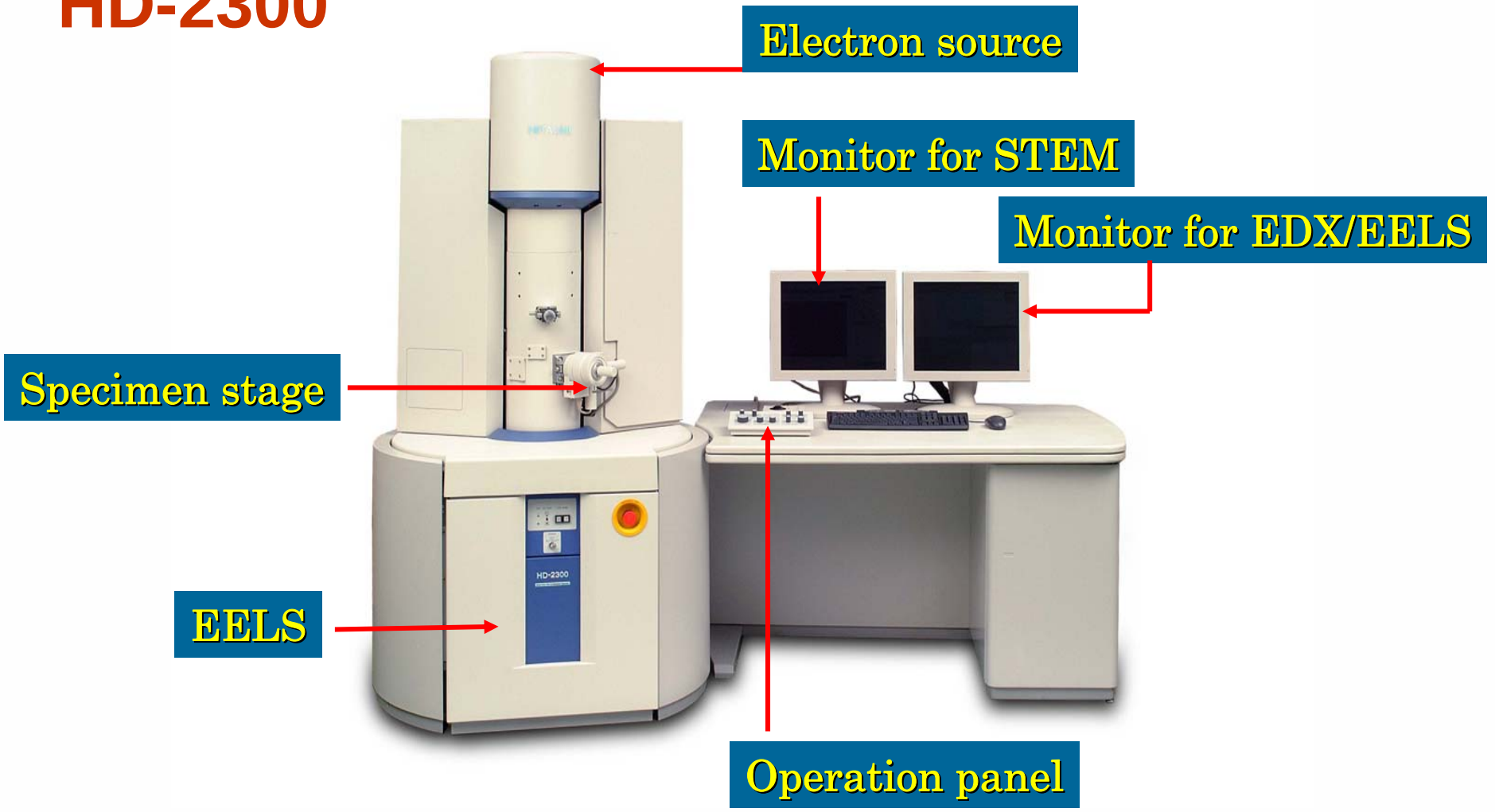
Special Features for H-7650 TEM

Automatic electron tomography

Automatic particle searching

360°-view structural and chemical analysis

Hitachi STEM: HD-2300

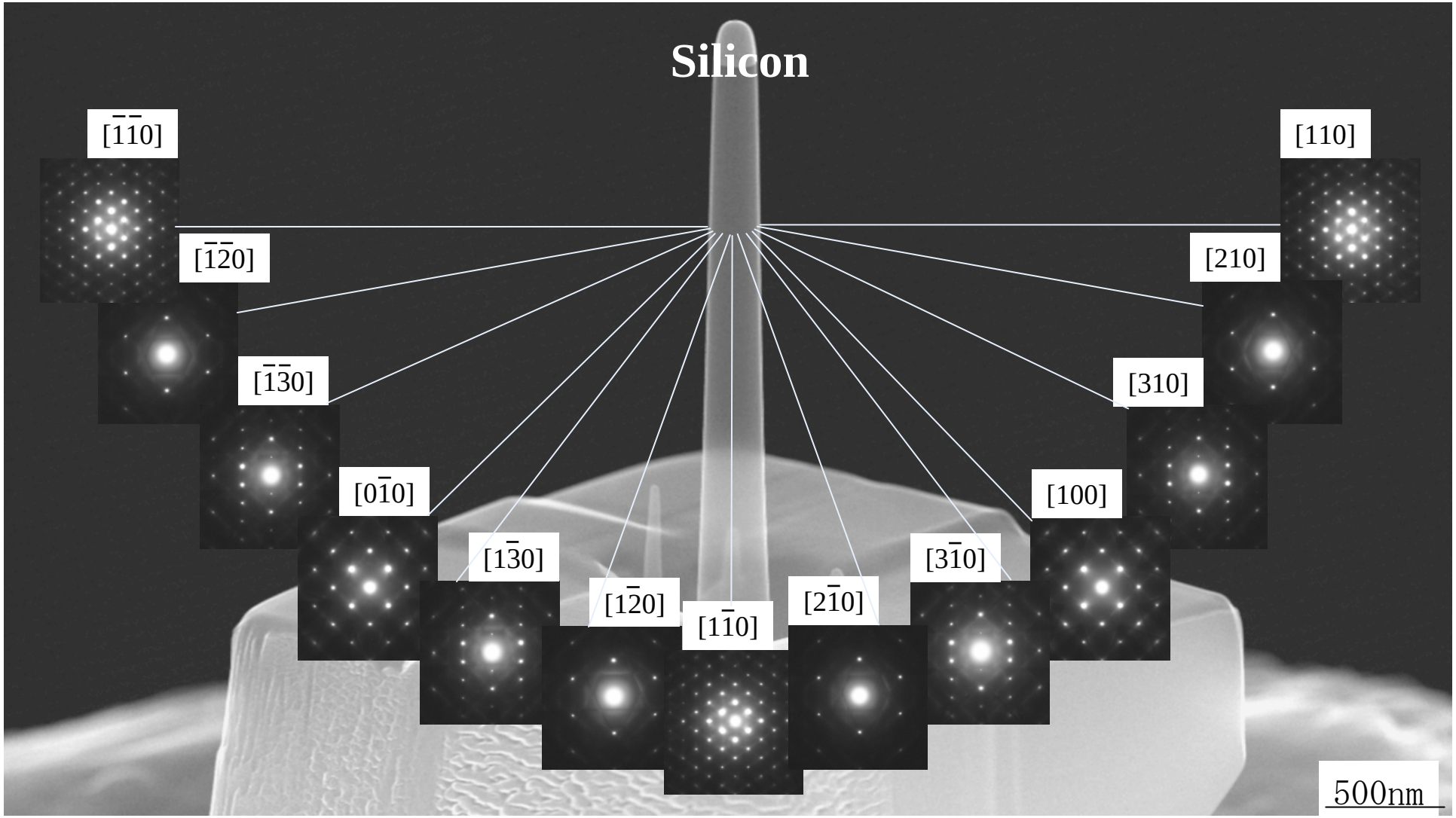


Special Features for HD-2300 STEM

- High through-put imaging + analysis tool
- SEM-like easy operation
- Complimentary BF, DF, SE Images
- EELS / EDS / Spectrum Imaging
- **3D structural and chemical characterization (Tomography reconstructions using Hitachi 3D holder**
- Low-loss and Core-Edge fine structures
- Diffraction-based measurements

***Cs Correction STEM (HD-2700) is now available**

Full Tilting-Angle-Range Electron Diffraction Using ONE TEM Sample



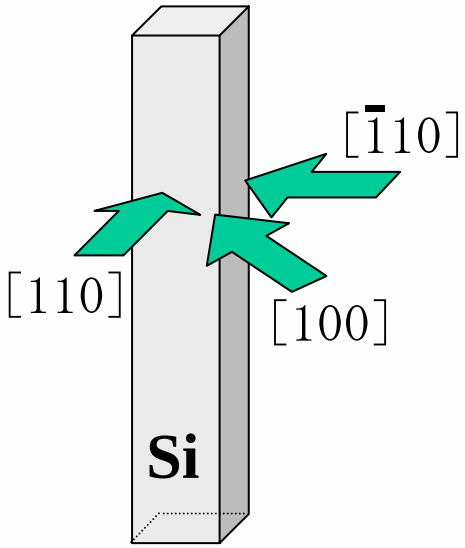
H-9500 TEM

T. Yaguchi et al, Japan. First prize at the photo contest of Japan microscopy society in 2005

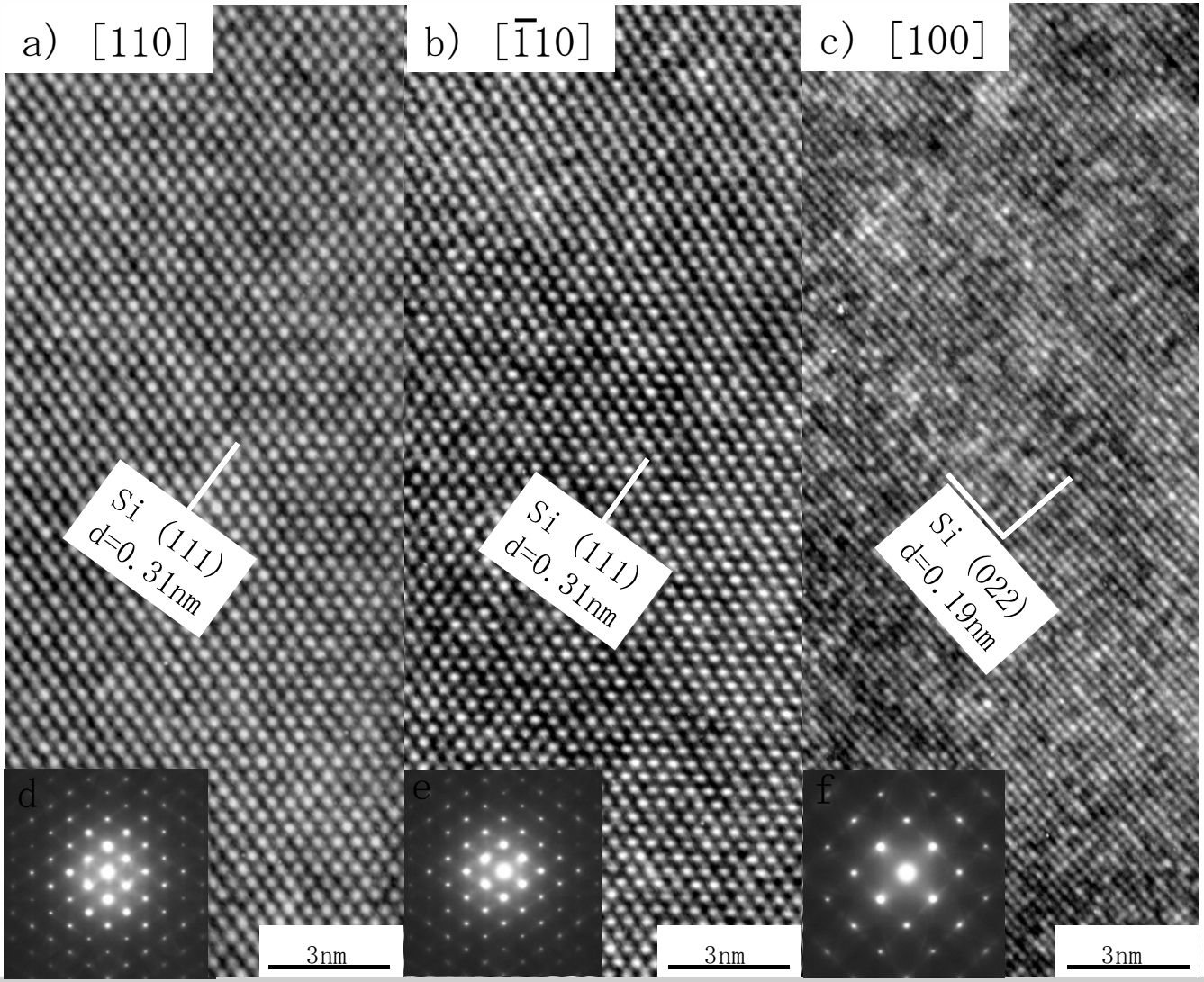
High-resolution Imaging Using Hitachi 3D Sample Holder

One sample for all-direction imaging and electron diffraction

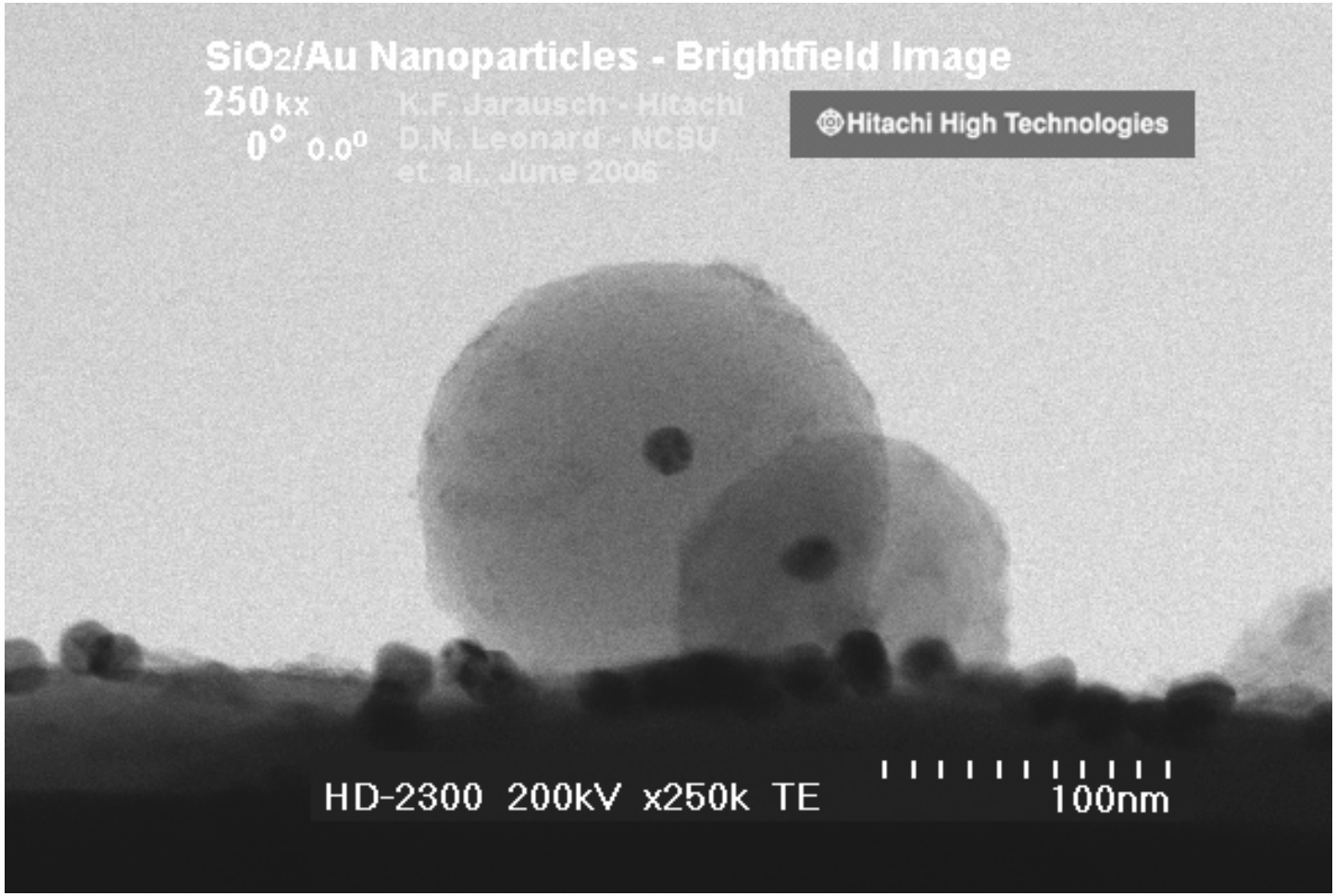
H-9500
300 kV TEM



High resolution TEM images (a)-(c) and electron diffraction patterns taken from three different directions of the same Si sample.



3D View of Nanomaterials Using Hitachi 3D Sample Holder



Instrument : Hitachi 200 kV dedicated STEM, HD-2300
Sample rotation: 0 to 360°

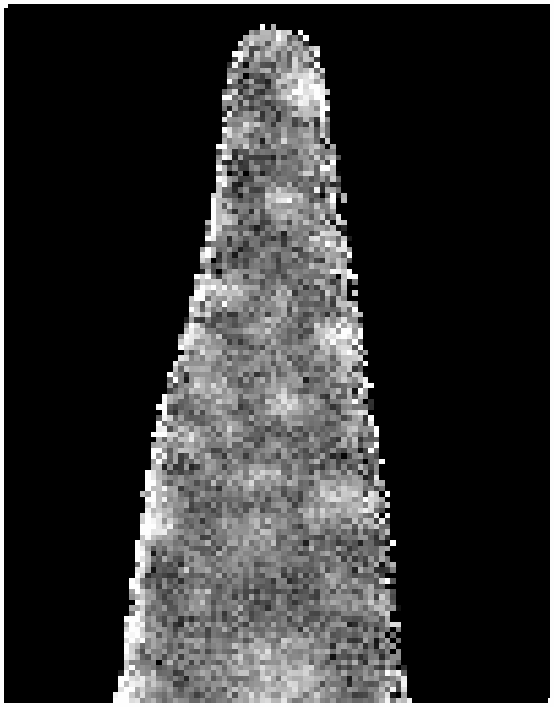
Movie available upon request

3D Chemical Mapping Using Hitachi 3D Sample Holder

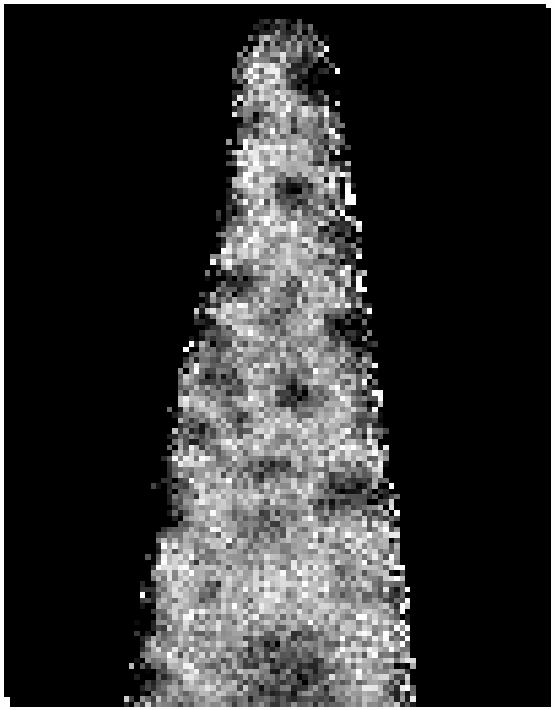
Ni-base Superalloy

Mapping

Ni



Cr



Ti

100nm

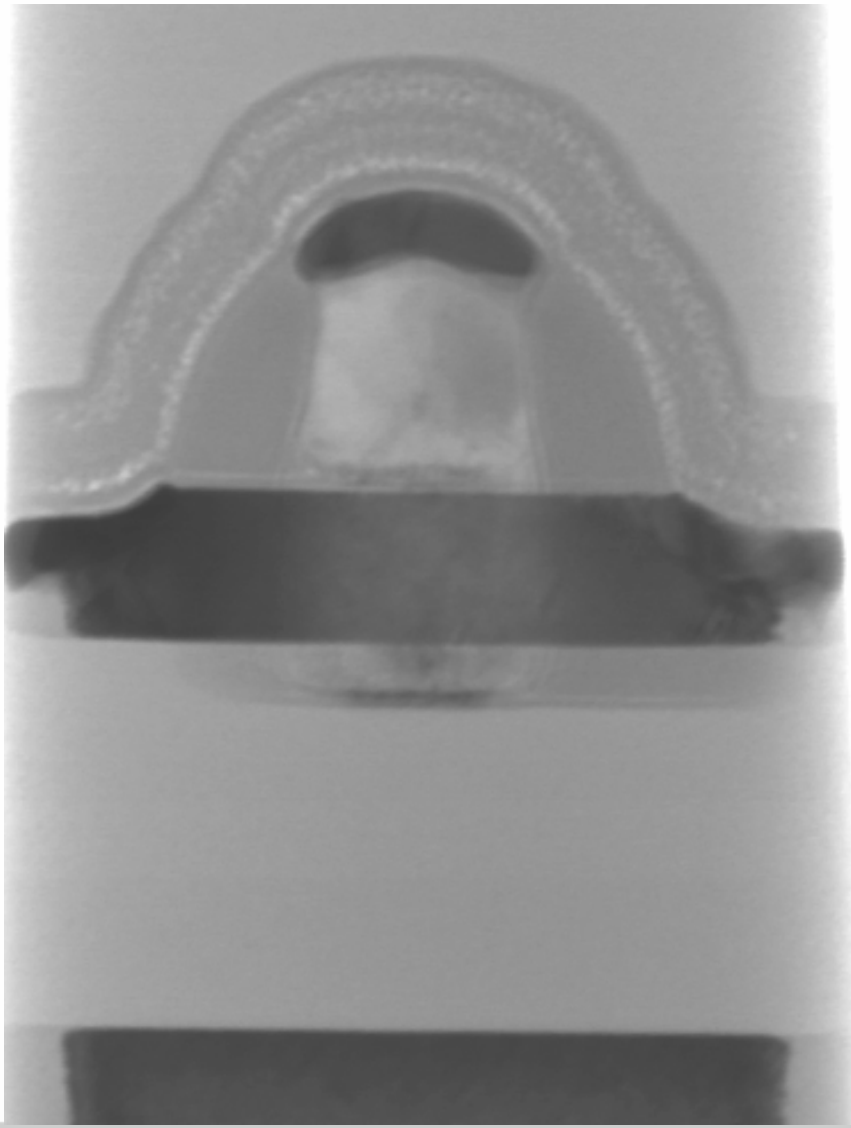
Instrument : Hitachi 200 kV dedicated STEM, HD-2300

Probe size : 1 nm, Probe current : 1 nA

Movie available upon request

3D Chemical Mapping Using Hitachi 3D Sample Holder

Thin film device



Instrument: Hitachi 200 kV dedicated STEM, HD-2300

Movie available
upon request

Comments and detailed information? Please contact:

Xiao Feng Zhang
Hitachi High Technologies America, Inc.
Electron Microscope Division
5100 Franklin Drive
Pleasanton, CA 94588
USA

Tel: (925)-218-2814
Fax: (925)-218-3230
Email: xiao.zhang@hitachi-hta.com

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