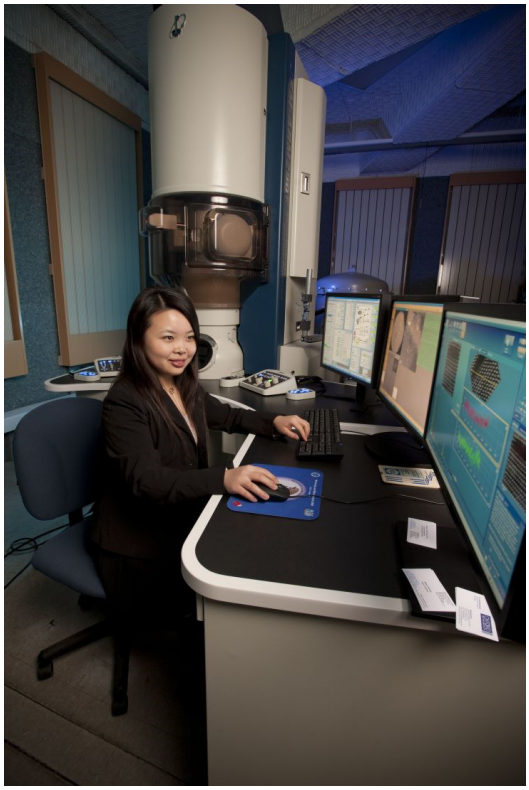
JEOL JEM-ARM200CF

Aberration Corrected Cold Field Emission Scanning Transmission Electron Microscope

Location: Science and Engineering South, 104A



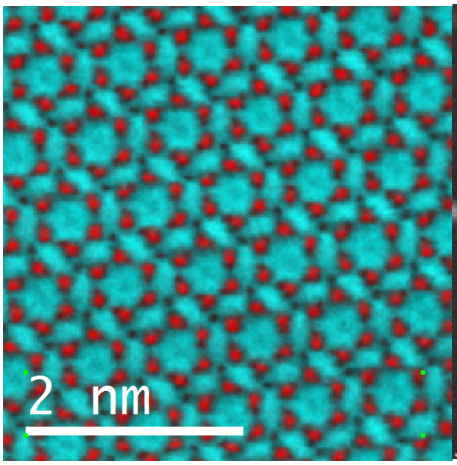
Description

The JEM-ARM200CF is a probe aberration corrected 200kV STEM/TEM with a cold field emission source with 0.35eV energy resolution. For HAADF imaging at 200kV this instrument has a resolution of less than 0.08nm. It was installed in 2011

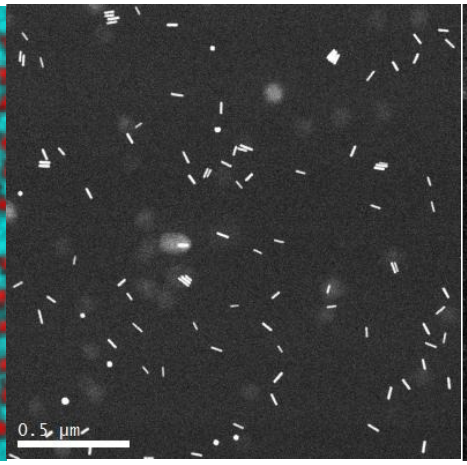
There are HAADF, LAADF, BF/ABF and a Gatan ADF/BF STEM detector. Up to four STEM images can be recorded simultaneously. For TEM Imaging the microscope has two CCD cameras - an upper 4MP camera and a lower 11MP camera. For microanalysis the microscope is equipped with a Gatan Quatum GIF and an Oxford X-max 100TLE windowless SDD X-ray detector both of which are capable of atomic resolution mapping.

In addition to the standard holders, Double Tilt Heating (1000°C), Double Tilt Cooling (-170°C), STM-TEM, Double Tilt Electrothermal (1200°C), Liquid, Vacuum Transfer and Single Tilt Tomography (+/- 70 deg) holders are available for this microscope.

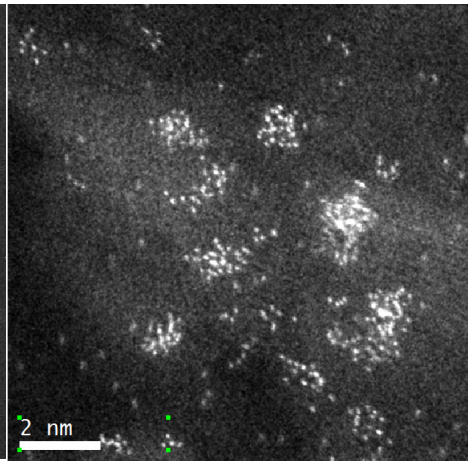
Reductions in quoted unassisted rates are offered to groups that use more than 60 hours of aberration corrected microscope time in a calendar month.



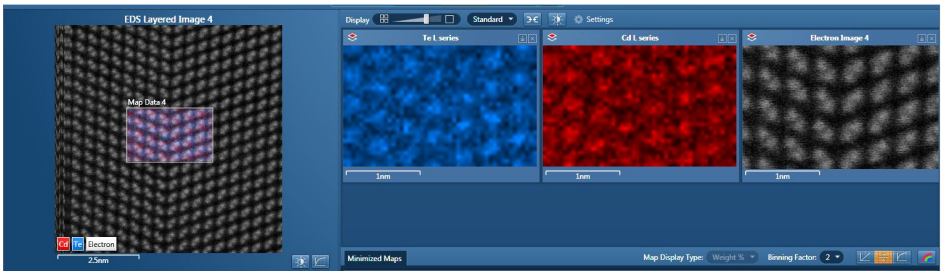
Overlay HAADF and ABF image of Si3N4



HAADF image of gold nanorods in water



HAADF image of Pt atoms on Alumina



Atomic resolution XEDS maps of Te (blue) and Cd (red) across a twin boundary

JEOL JEM-ARM200CF

Technical Specifications

- STEM resolution (HAADF): 0.078nm @ 200kV; 0.136nm @ 80kV
- STEM Resolution (BF) 0.136nm @ 200kV
- TEM Resolution: 0.10nm lattice, 0.19nm point-to-point @ 200kV.
- Accelerating Voltage: 200, 120, 80kV.
- Objective lens (TEM): focal length 1.9mm, Cs 0.5mm, Cc 1.1mm, minimum focus step 0.25nm.
- Objective Lens (STEM) Cs -0.1mm to 0.6mm, Cc 1.4mm
- Magnification Range (TEM): 2,000x - 2,000,000x.
- Magnification Range (STEM) 20,000x - 150,000,000 x
- Camera length range: 80 - 2,000mm.
- Specimen Tilt range up to +/-25 degrees (X & Y) depending on Specimen Stage.
- Specimen movement: 2mm (X,Y), 0.1mm (Z)
- Energy Resolution (Quantum): 0.35eV