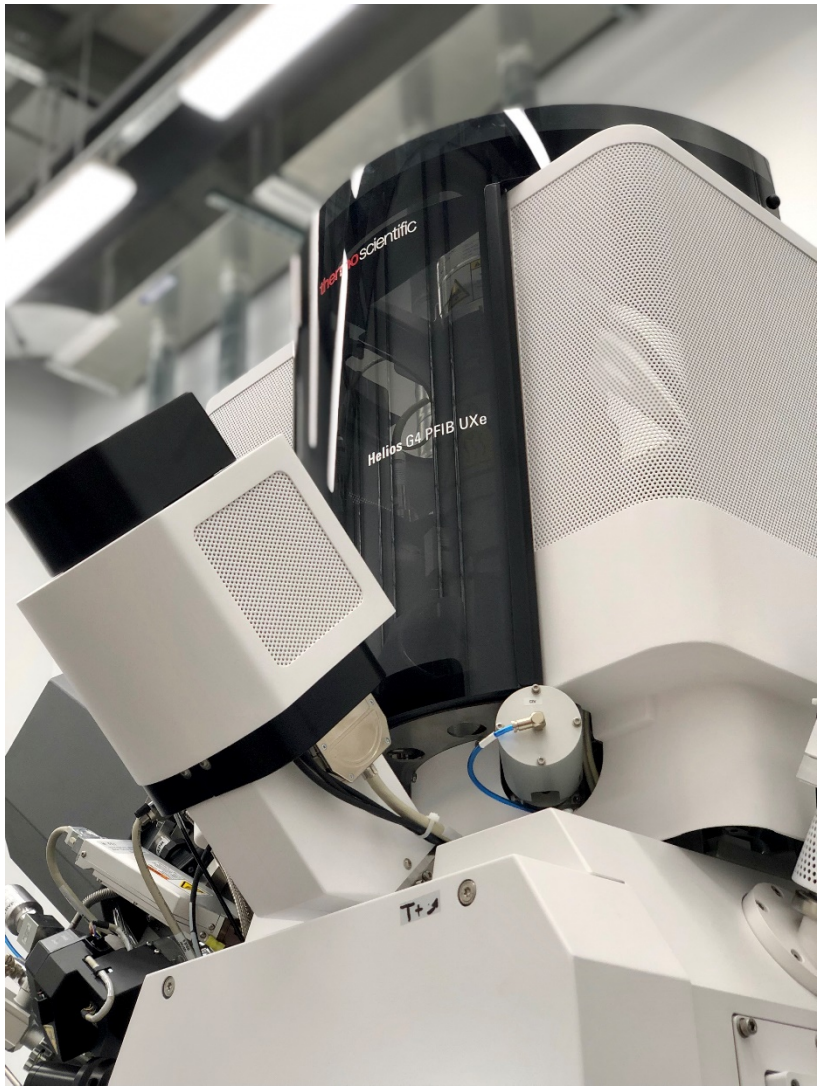
Helios G4 PFIB UXe (FEI)



Technical characteristics

Electron beam resolution:
- ❑ 0.6 nm at 30 kV (STEM*)
- ❑ 0.6 nm from 15 kV to 2 kV
- ❑ 0.7 nm at 1 kV
- ❑ 1.0 nm at 500 V

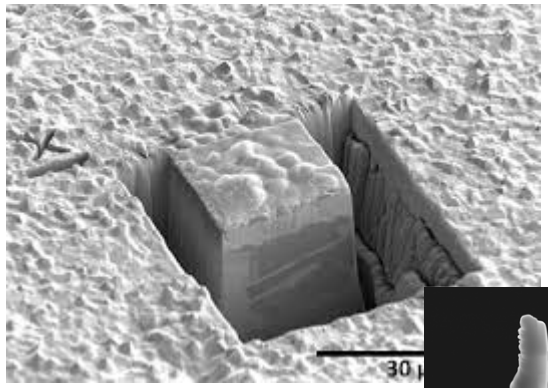
Ion beam resolution:
- ❑ 4.0 nm at 30 kV using preferred statistical method
- ❑ 2.5 nm at 30 kV using selective edge method

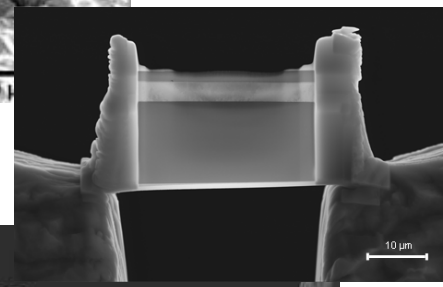
Landing voltage range:
- ❑ E-beam: 20 V - 30 kV
- ❑ I-beam: 500 V - 30 kV

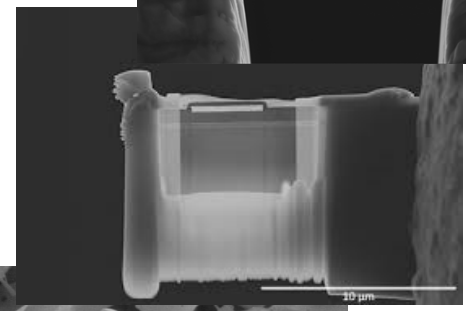
Probe current:
- ❑ E-beam: 0.8 pA up to 100 nA
- ❑ I-beam: 0.1 pA – 65 nA

(15 position aperture strip)

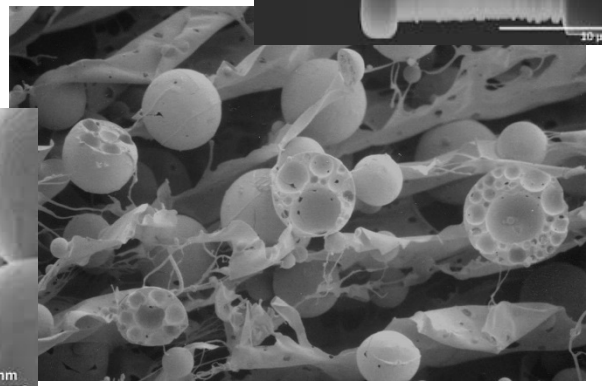
TEM foil preparation

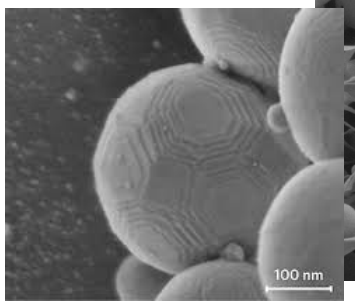






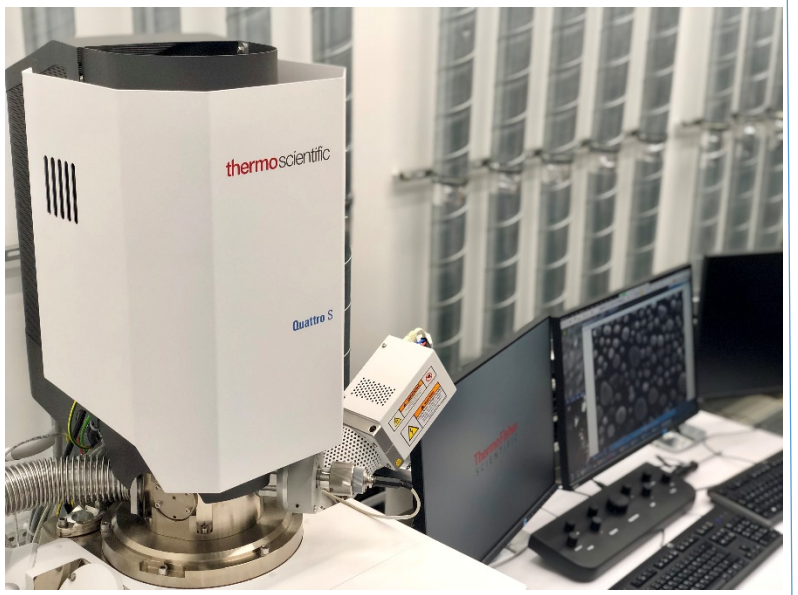
Morphology





Quattro S ESEM (FEI)

Technical characteristics



Electron beam resolution

High-vacuum imaging

- ❑ 0.8 nm @ 30 kV (STEM)
- ❑ 1.0 nm @ 30 kV (SE)
- ❑ 2.5 nm @ 30 kV (BSE) – 3.0 nm @ 1 kV (SE)

High-vacuum imaging with beam deceleration

- ❑ 3.0 nm @ 1 kV (BD mode* + BSED*)
- ❑ 2.1 nm @ 1 kV (BD mode* + ICD*
- ❑ 3.1 nm @ 200 V (BD mode* + ICD*)

Low-vacuum imaging

- ❑ 1.3 nm @ 30 kV (SE)
- ❑ 2.5 nm @ 30 kV (BSE)
- ❑ 3.0 nm @ 3 kV (SE)

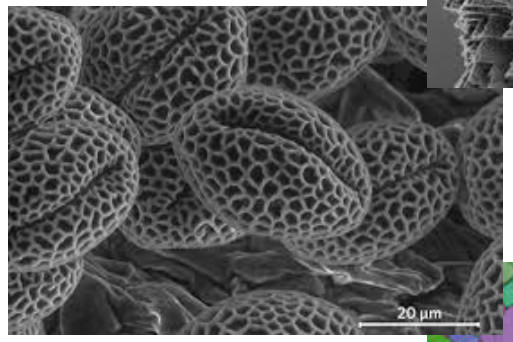
ESEM

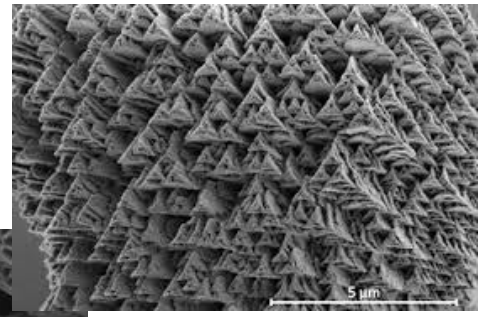
- ❑ 1.3 nm @ 30 kV (SE)

Electron beam parameter space

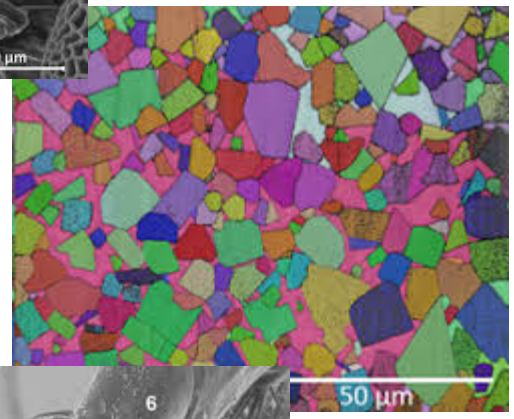
- ❑ Beam current range: 1 pA to 200 nA
- ❑ Accelerating voltage range: 200 V – 30 kV
- ❑ Landing energy range: 20 eV – 30 keV with optional beam deceleration

Morphology

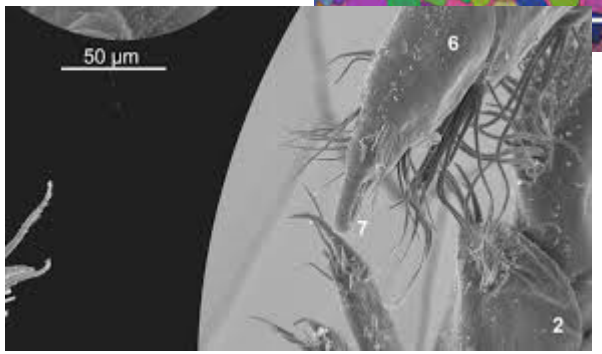




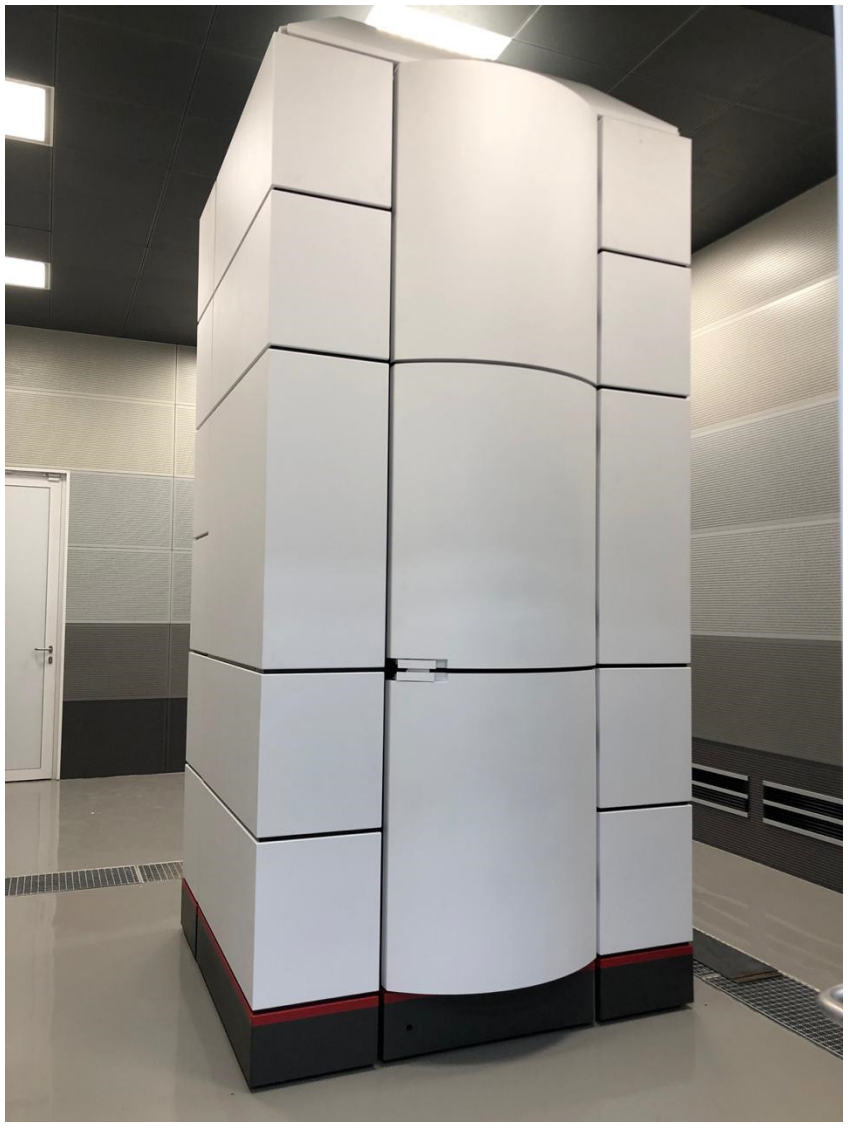
EBSD



Morphology



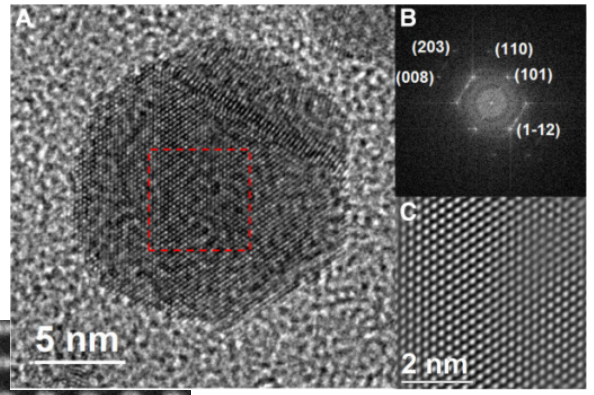
Titan Themis Z (FEI)



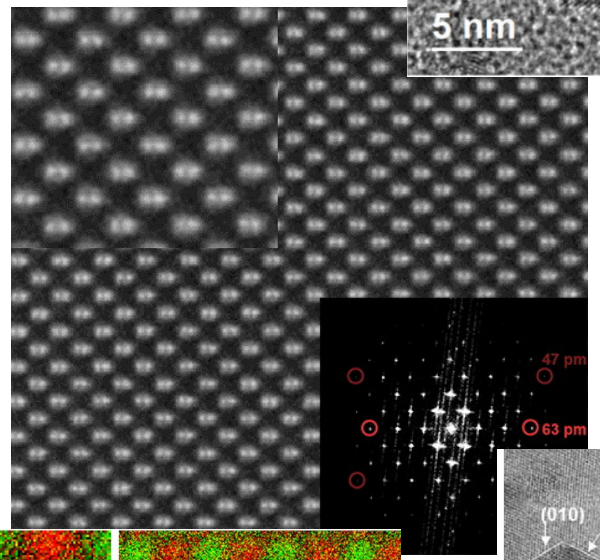
Technical characteristics

- TEM, resolution 120 pm
- STEM Cs corrected, resolution 80 pm
- Monochromator, resolution 0.15 eV
- Resolution at 80 kV: 100 pm
- Ultra-stable, high brightness Schottky field emitter gun (X-FEGAccelerating voltage range: 80 kV, 120 kV, 200 kV, 300 kV
- Super-X EDX (≤ 136 eV for Mn-Kα and 10 kcps (output) and ≤ 140 eV for Mn-Kα and 100 kcps (output))
- Quantum GIF
- Full remote control

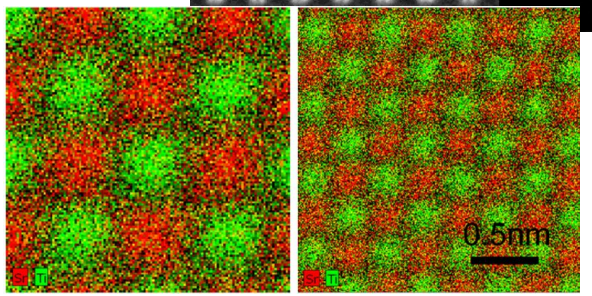
HRTEM



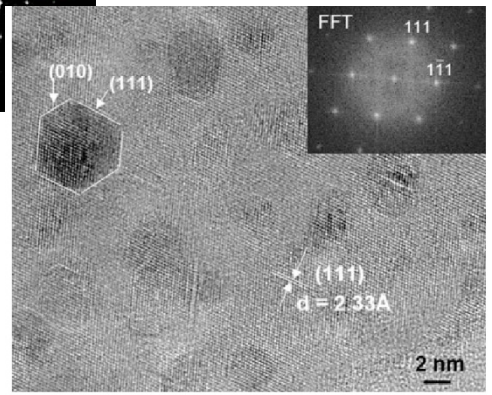
HRSTEM



EDX



TEM



Sample preparation

List of equipment

- ❑ High speed cutting machine **Accutom-100** (Struers)
- ❑ Automatic polishing machine **LaboPol-30+LaboForce-100+LaboDoser-100** (Struers)
- ❑ Electropolishing machine **LectroPol-5** (Struers)
- ❑ Polishing machine for foil preparation for transmission electron microscopy **TenuPol-5** (Struers)
- ❑ Press **TechPress3** (Allied)
- ❑ Polishing machine for sample preparation for transmission electron microscopy **MultiPrep™ System 8'' for TEM sample prep** (Allied)
- ❑ Polishing machine **MetPrep 1™ for SEM sample prep** (Allied)
- ❑ Cutting machine **TechCut 5** (Allied)
- ❑ Glove Box **LABstar Glove Box Workstation** (MBraun)
- ❑ Optical Microscope **Leica DM4M (**Leica)
- ❑ Optical Microscope **Leica DM2700M** (Leica)
- ❑ Ion Beam Milling System **Leica EM RES102** (Leica)