

FEI Quanta™ 3D FEG equipment and specifications

Electron optics	FEG with NG Schottky emitter Accelerating Voltage 500V to 30kV; Probe Current up to 200nA Spatial resolution SE: 1.2 nm @ 30kV; 2.9 nm @ 1 kV (High Vacuum)
Ion optics	Sidewinder Ion Column, Liquid Gallium Ion emitter Accelerating Voltage 2kV to 30kV; Probe Current 1pA – 65nA
Eucentric height	10 mm working distance
Vacuum modi	High Vacuum, Low Vacuum, Environmental vacuum mode (ESEM)
Detectors	SED (secondary electron detectors): ET-SED (high Vacuum), LV-SED (Low Vacuum); GSED (ESEM) BSED (back scattered electron detector): solid state BSED with 4 quadrants STEM (scanning transmission electron detector): 14 segments for bright field, dark field, high-angle annular dark field imaging IR-CCD camera (2x) EDX : EDAX Apollo XV (see below) EBSD : EDAX Digiview V camera (see below) FSD : EDAX FSD (Retrofit) for EBSD: 2 element solid state detector
Stage	5 axis motorized stage (x, y, z, rotate, tilt); tilt angle: -15° to +75° x-, y- movement +/- 25 mm
Micromanipulator	Omniprobe 100.7
Gas Injection Systems	Platinum deposition Carbon deposition
Software	Windows XP 4-quadrant user interface AutoFIB, AutoTEM: automated FIB tasks AutoSlice and View: automated serial sectioning and imaging

EDS/EBSD-System PEGASUS APEX 4 (Ametek EDAX)

EDX-Detector	APOLLO XV Silicon Drift Detector Sensor: 10 mm ² Resolution: at Mn K (at 100000cps) min 128 eV; at C K 52 eV capable of quantifying elements down to Boron
Software for EDX data acquisition and processing	TEAM 4.3; GENESIS 6.5 Spectrum acquisition, SE-BSE Imaging, Mapping: SE, BSE, X-ray signal automated Multipoint analysis Quant map processing: background correction; k-ratio; full matrix correction (algorithms: ZAF; PhiZAF; PhiRoZ); light element corr. (SEC); standardless quantification; spectral mapping
EBSD Camera	DigiView V resolution: 1392 (horizontal) x 1040 (vertical) pixels single stage Peltier cooling EBSD pattern detection down to 5 keV accel. voltage motorized insertion/retraction under vacuum Azimuth 0°; Elevation 5°
Software for EBSD data acquisition and processing	TSL OIM Data Collection 7.3.1; TEAM 4.3 simultaneous EDS and OIM data acquisition ChI Scan indexing technique (EDX-data assisted EBSD indexing); high-resolution Hough Transform; off-line re-indexing and analysis TSL OIM Analysis 7.3.1 : EBSD data processing Delphi : Phase identification by combined EDS and EBSD