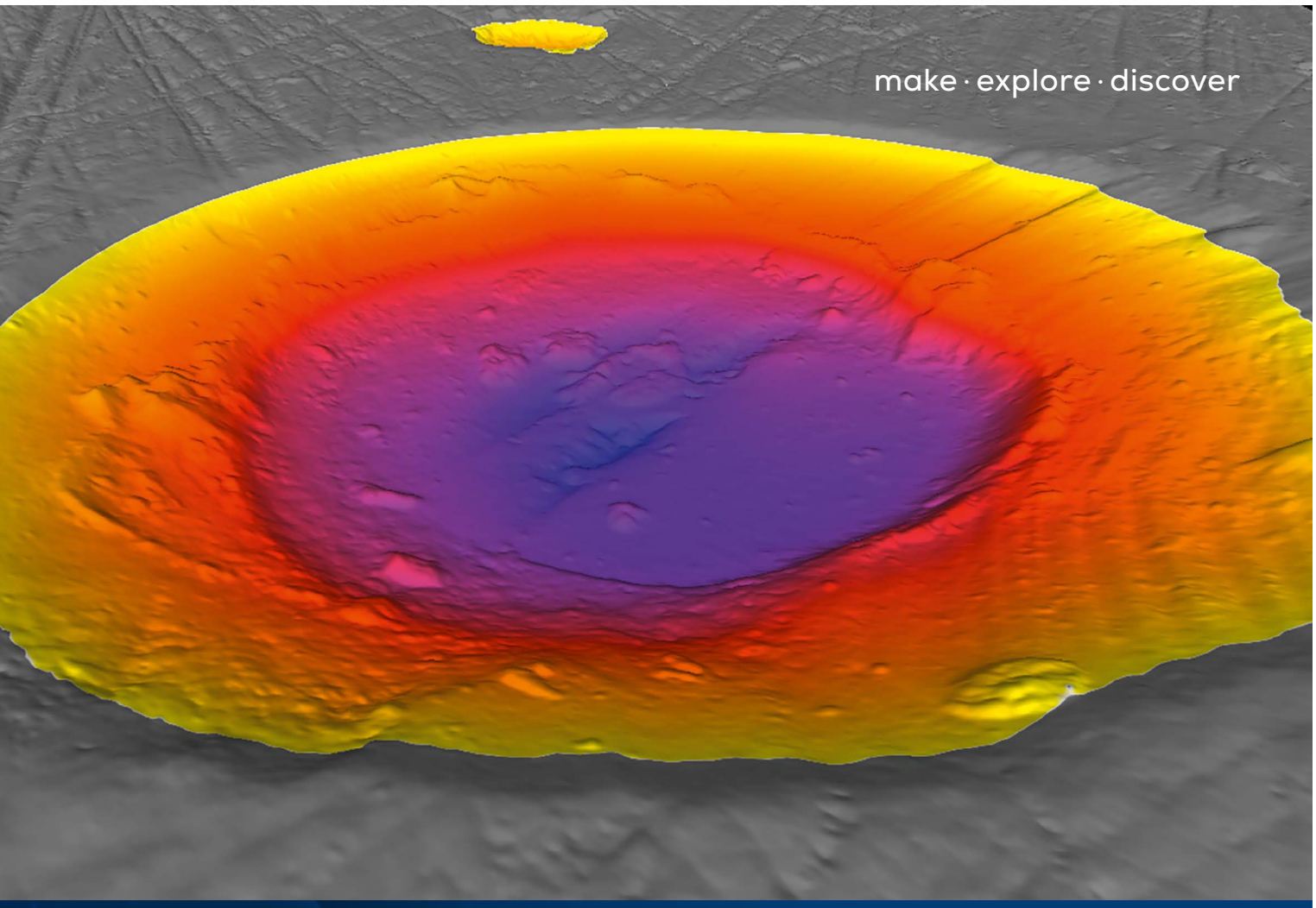


BSE Topography

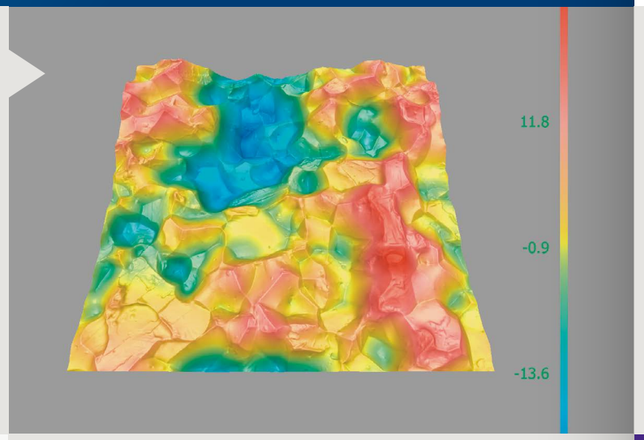
Live and calibrated height measurements, with SEM or FIB-SEM

point electronic

Add the third dimension to your SEM

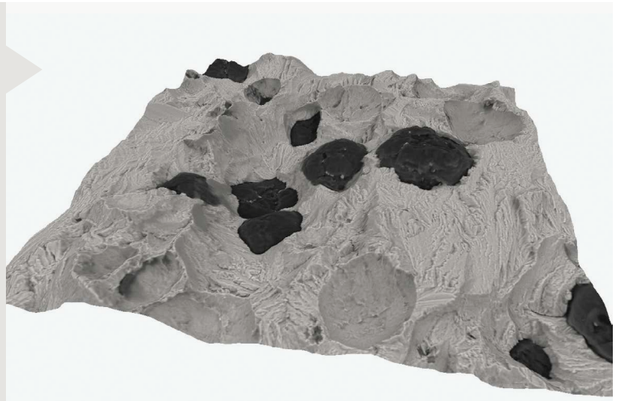
Measure surface height with SEM

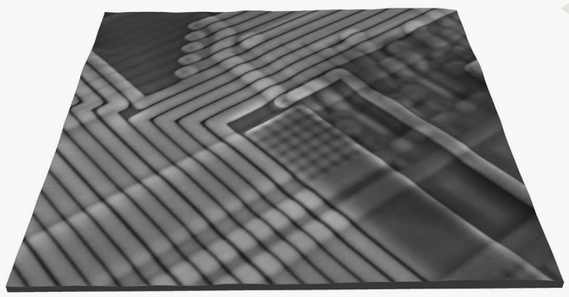
- Use conventional segmented BSE signals
- Measure live with automated topographic reconstruction
- Save topographic data in standard file formats



Visualise complex surfaces in 3D

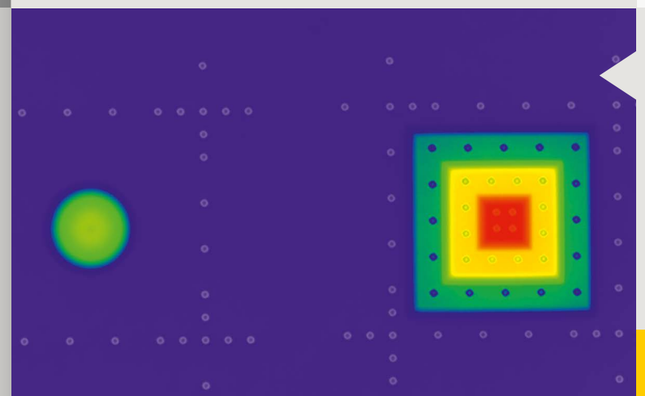
- Add texture from SE, EDS or EBSD maps
- Apply automatic colour gradients as texture
- Export 3D screenshots for high-impact visualisation





Distinguish topography from composition

- Resolve ambiguities in image interpretation
- Reach a wider audience with 3D models, visualisation and printing
- Measure 3D distances and volumes

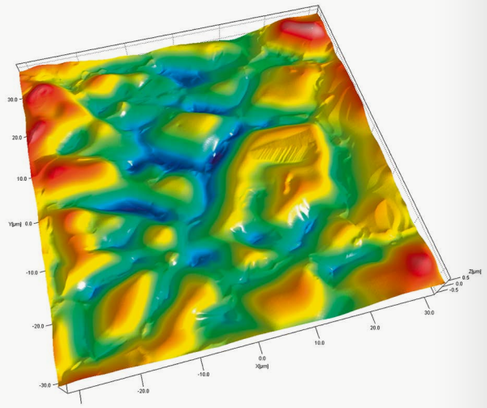


Calibrate and measure heights

- Calibrate measurements with dedicated 3D samples
- Measure 3D positions, distances and angles
- Measure and report height profiles

Monitor in-situ surface dynamics

- Record surface evolution during in-situ experiments
- Measure deviations from nominal surface
- Quantify 3D changes for different processes



Continue live topography with off-line analysis

- Import data into full feature analysis software
- Measure surface roughness and analyse texture
- Analyse morphology, grain and particle distribution

BSE Topography

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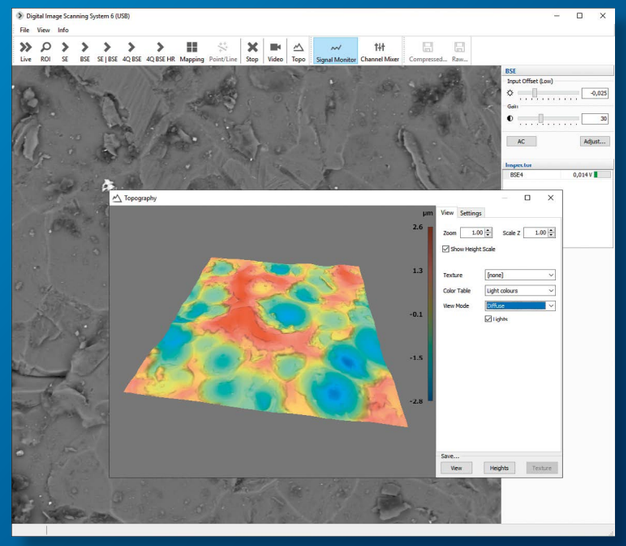
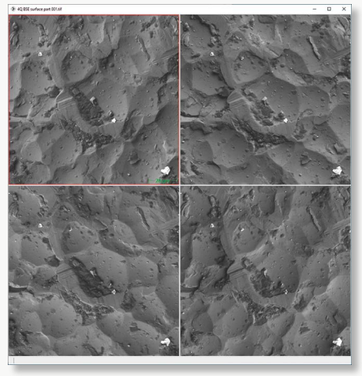
Live calibrated height measurements with any SEM or FIB-SEM



DISS6 - detector control and image acquisition app

- Live surface height reconstruction from BSE signals
- Built-in 3D surface visualization tool
- Configurable workflows with integrated SE and BSE scan profiles



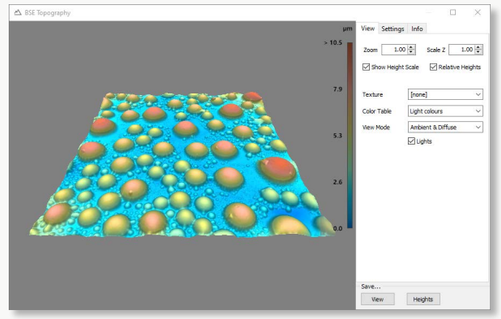
Quantitative 4Q BSE acqusition

- Factory calibrated amplification and digitization
- Automatic offset and gain corrections
- Live inspection of calibrated pixel values

BSE Topography

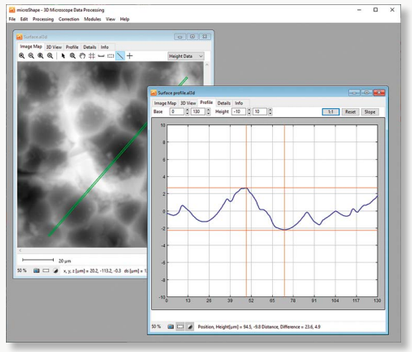
Live topographic reconstruction

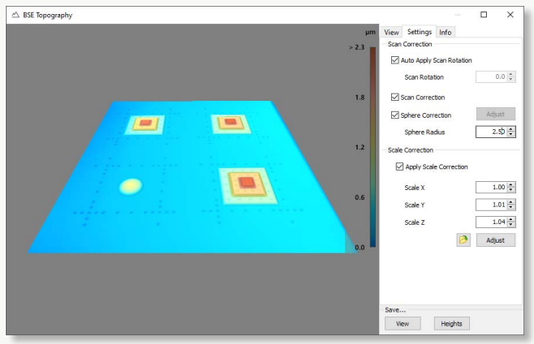
- Pan, rotate, tilt, zoom and scale height
- Enhance views with shadows and pseudo-colour
- Texture with BSE average or surface gradients



microShape - surface topography app

- Load, view and edit height and texture layers
- View and manipulate data in 3D
- Extract and export 3D line profiles
- Export standard PLY files for 3D printing





Automated 3D calibration

- Use 3D reference sample to calibrate acquisition
- Get automatic scale parameters for x, y and z
- Save scale parameters for different SEM configurations

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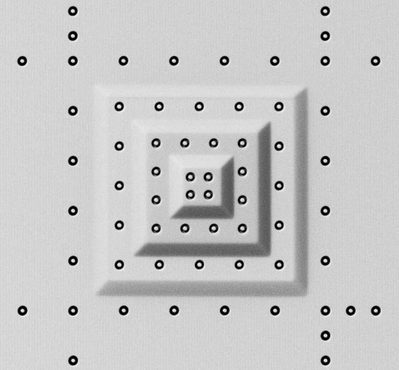
Turn-key solution for any SEM or FIB-SEM

Quantitative electronics for BSE acquisition

- 3D calibration sample
- BSE detector
- Scan generator
- Data acquisition

3D calibration sample

- FIB-SEM deposited 3D structures with reference marks for automated calibration
- Calibrated 3D reference data acquired with a metrological SPM system
- Automated, statistical 3D calibration algorithm



BSE detector

- Segmented 4Q Si sensors for topography
- In situ preamplifiers for minimum noise and maximum speed
- Automated insertion/retraction on port mount

BSE Topography

BSE DISS6 imaging

- Signal amplifier, scan generator and image acquisition
- Simultaneous acquisition of all signals
- Advanced offset and gain normalization
- Very large image resolution

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3D calibration standard

Calibration structures	3× multi-level pyramidal elements
	1× spherical element
	Reference marks
Pyramidal elements	Produced by FIB deposition
	3× with nominal size of 20 × 20 × 3 µm
Spherical element	Produced by FIB deposition
	10 × 10 × 1 µm (nominal)
Auto-recognition elements	Produced by FIB milling
	800 nm diameter (nominal)
Calibration area	80 × 80 µm
	40 × 40 µm (single pyramid)
Reference data	Binary file on USB-drive
	3D coordinates of reference marks
	Calibration report

BSE detector

Sensor	Detector-grade Si chip
	Four-quadrant (4Q) geometry
	Chip on ceramic board mount
	6 mm inner diameter
	20 mm outer diameter
	1 kV minimum acceleration voltage
Pre-amplifier	In-situ mount
	10^5 V/A gain
	200 ns minimum dwell time (gain dependent)
Mechanics	Port mounted, motorized insertion/retraction
	Adjustable height and lateral alignment
	Automatic touch alarm
	Integrated electrical feedtroug

BSE DISS6 imaging

Signal inputs	BSE 1…4
	AUX 1…4
BSE 1…4 amplification	-1…1 V input offset (calibrated brightness 1…4)
	1…1,800× gain (calibrated contrast 1….4)
	-0.5 ... 0.5 V output offsets (calibrated reference 1…4)
	BSE average (hardware mix of 1…4)
	3.4 MHz … 34 Hz low-pass filter
4Q BSE control	Automated 4Q global brightness
	Automated 4Q global contrast
	Automated input offsets (dark correction)
	Automated gain normalization (bright correction)
	Automated time filter (matching pixel dwell time)
Digitization	12-bit (calibrated BSE1…4)
	8× simultaneous signals (BSE1…4 and AUX1…4)
	32,000× max. oversampling (pixel averaging)
Scan generator	X and Y scan outputs (calibrated)
	Beam blank output (optional)
	64k × 64k pixels maximum resolution
	0.5 GPixels maximum frame size (software limit)
	200 ns minimum pixel dwell time (detector limited)
	6 milliseconds maximum pixel dwell time
	256× max. frame average
	50x max. line average
	Frame, line, pixel synchronization (optional)

PC/Laptop, display (optional)

PC/Laptop	Intel Core i3 minimum
	2× USB 2.0 minimum
	Windows 11…7
	Network is recommended for remote support
Display	1,280 × 1,024 resolution minimum

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DISS6 app

Detector control	Automatic insertion/retraction
	Contrast and brightness
	Input offset and gain normalisation corrections
	Live calibrated pixel values
	Live grayscale ‘topographic’ and ‘compositional’ mix
Topography tool	Live topographic calculation from BSE1…4
	Live 3D view of height and texture
	Rotation, shift, zoom and scale controls
	Colour look-up-tables
	Automatic spherical correction
	Automatic X, Y and Z scale corrections
File formats	Compressed 8-bit multi-page TIF with XMP tags
	Raw 16-bit multi-page TIF with XMP tags
	Binary AL3D
	Plain text SDF
Operating system	Windows 11…7

microShape app

Topography viewer	AL3D file format
	ASCII, 8/16-bit TIFF file formats
	BCR, Surfer DAT export formats
	2D view of texture and height layers
	3D view of complete topographic data
Topography processing	Crop, rotate, resize
	Scale and shear 3D corrections
	Geometric scan corrections
	Texture layer replacement
4Q BSE reconstruction tool	Common SEM image file formats input
	Configurable detector geometry
	Shape-from-shading algorithm
3D measurements tools	3D points, distances and angles
	Spherical and polynomial surface fit
	3D height line profile graphs
	PDF report file format
	ASCII, CSV data export file formats
3D print	PLY export file format
Operating system	Windows 11…7

Parts and cables

3D calibration sample	Standard 1×
BSE detector	Standard 1×
BSE DISS6 imaging	Standard 1×
SEM scan cable	Standard 1×
BSE detector cable	Standard 1×
Mains power cable	Standard 2×
USB cable	Standard 2×
USB flash drive	Standard 1×
PC, keyboard, mouse	Standard 1×
Displays	Standard 1×

Software packages

Drivers	PE USB driver
Libraries	DISS6Control
	DISS6Topography
Software	DISS6 app
	microShape app
	EM Gateway server
	microCal (optional)

Weight and dimensions

Shipping	Typ. 36 × 32 × 150 cm
	Typ. 12.5 kg

Site requirements

Power	2x mains 110/220 VAC single phase 50/60 Hz
	On the same earth as the microscope
Mount	1× flange for BSE detector
Imaging	1× external scan interface on the SEM electronics
Space	BSE DISS6 unit may be placed on the SEM table

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Our design principles

We look back on over 30 years of experience in development and manufacture of high-performance instruments and technologies for microscopy.

We are driven by an ambition to expand abilities and to improve performance of electron microscopes.

Our aspiration is to make the best quality tools and to join our customers on their journeys of scientific exploration and discovery.

Performance
Microscopy must be a reliable and enjoyable experience
- Design for highest speed and resolution at the lowest noise
- Develop smart independent controllers for live optimization
- Support new users with intuitive and automated controls
- Assist advanced users with access to all parameters

Efficiency
Microscopes must provide an uninterrupted focus
- Use standard microscope controls and data formats
- Give instant feedback with live image mixing and processing
- Add bespoke software tools and algorithms for repetitive tasks
- Support developers with open access libraries and documentation

Environment
Products and technologies must be sustainable
- Reduce power consumption through smart design
- Minimize material use, embrace reuse where possible
- Save weight and volume for shipping and maintenance
- Enable everyone to develop sustainable innovations

Quantification
Data and control must be in physical units
- Provide calibrated inputs and outputs for quantitative measurements
- Supply samples, procedures, and software for calibration
- Distribute all control parameters in device independent values
- Empower the user to operate the SEM as a measuring device

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