DATASHEET

Autoscript 4 Software

Get more out of your SEM or DualBeam with Python-based scripting.

Autoscript 4 Software is a Python-based Application Programming Interface (API) that offers control of Thermo Scientific SEM and DualBeam systems. It opens up the microscope to a world of advanced functions that can be employed for powerful automation.

Thermo Scientific™ Autoscript™ Software allows repetitive work to be done faster, more accurately and with fewer mistakes. It allows the SEM or DualBeam system to fit into workflows based on existing Python scripts for data collection and processing, and allows unattended operation. Autoscript 4 Software also enables new tasks not possible with manual control. Finally, Autoscript 4 Software gives access to microscope features which could not be accessed with previous scripting functionality, such as simultaneous detector readout, beam alignments and calibration.

Autoscript 4 Software is based on of Python 3.5, a productive open source scripting language that is supported by a large community and a vast range of libraries. An integrated development environment offers accessible and easy scripting functionality using syntax highlighting, auto-completion and object browsing. Autoscript Software's scalability addresses both simple and complex automation tasks, giving users the flexibility to run either from the local microscope support computer or from distributed computing clusters.

Bringing advanced automation to every SEM or DualBeam, Autoscript Software gives researchers and scientists the tools to make their system more useful and more productive.

Key Benefits

Autoscript Software gives access to **new possibilities** for acquisition, analysis, interfacing, imaging, patterning and data display that were previously inaccessible to manual operators.

Scripting of repetitive or tedious tasks leads to much **improved reproducibility and accuracy** for higher quality results.

Unattended, high throughput imaging and patterning makes more effective use of your time, and of SEM/DualBeam time.

Supported by Python 3.5-based scripting environment: Python, the most popular programming language available and the standard in scientific computing, provides access to A vast collection of pre-installed libraries for scientific computing, data analysis, data visualization, image processing, documentation and machine learning.

An integrated development environment (IDE) supporting object browsing and syntax highlighting with auto completion and object browsing makes it **easy to get started.**
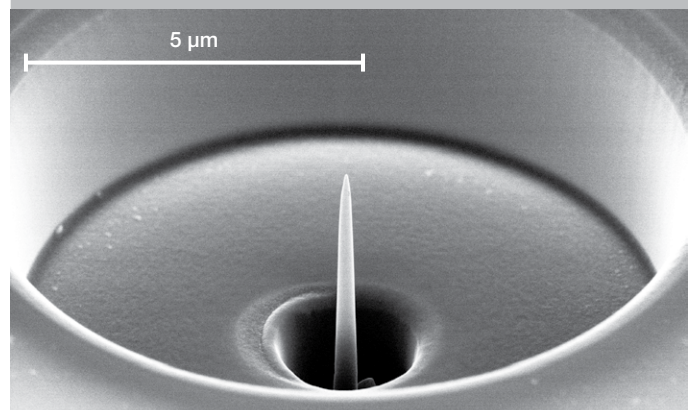
Example 1. Drift-corrected nano-pillar milling using multiple beam currents
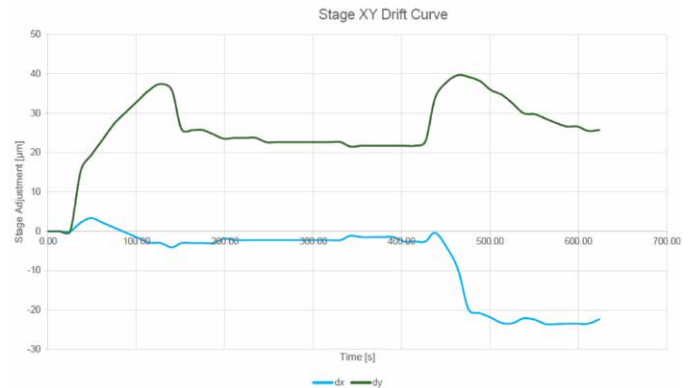
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Example 2. Feature based image segmentation (geological sample)

Example 3. Compensation of thermal drift during a bulk heating experiment.

Supported microscope control methods:

- Electron beam control
- Ion beam control
- SEM and FIB imaging (all detectors)
- Stage control
- Patterning
- GIS control

Included in the AutoScript package

- Python 3.5
- Common packages: NumPy, SciPy, Pandas, OpenCV, SciKit-image, Matplotlib, Jupyter
- Microscope control Python package
- PyCharm Community IDE
- Proprietary vision tools (pattern matching) optimized for electron microscopy
- Detailed online documentation

Application examples

- Automated region-of-interest finding and imaging
- Parameter sweeps (acquire images at different kV, current, etc)
- Feature tracking or drift compensation
- FIB nanopatterning
- On-the-fly feature measurements
- On-the-fly image processing (segmentation, deconvolution, thresholding, colormap changes, image inversion, 3D plots, FFTs, histogram operations)

Compatibility

- Runs on Windows® 7 or Windows 10 support computer
- Compatible with Windows 7 or Windows 10 based SEM and DualBeam systems

Find out more at **thermofisher.com/EM-Sales**

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