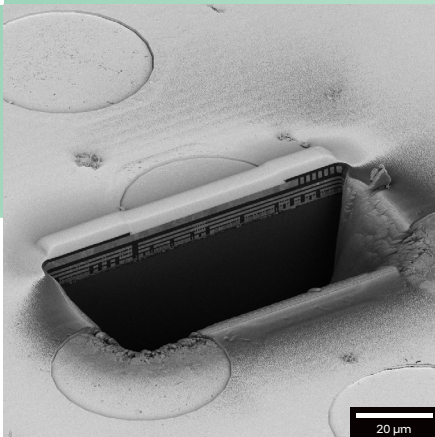


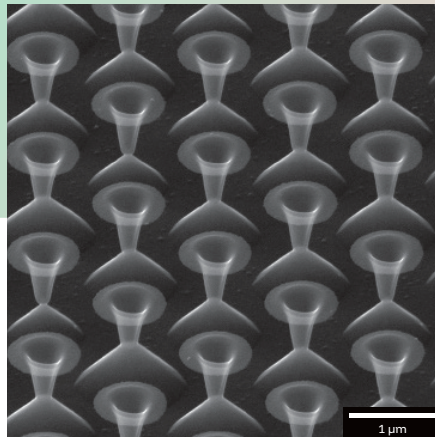
Tescan Essence™ DrawBeam

Expandable software module for high precision nanopatterning and nanofabrication applications

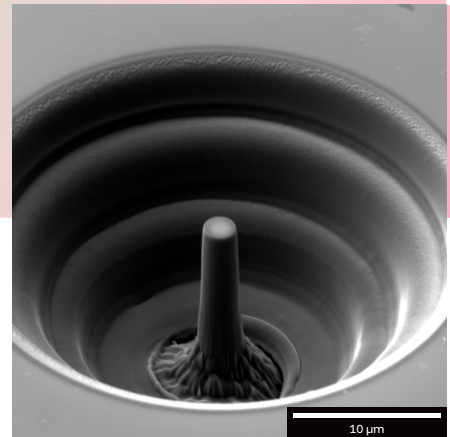
Essence™ DrawBeam is a modular, fully integrated patterning engine for FIB-SEM applications such as cross-sectioning, sample preparation for TEM and atom probe tomography or mechanical testing. DrawBeam handles advanced operations like patterning and creating complex structures using focused electron beam-induced deposition (FEED), focused ion beam-induced deposition (FIBID) and other user-defined focused ion beam (FIB) milling processes. Standard Essence™ DrawBeam controls basic patterning, milling and deposition functions for common applications directly from the live SEM or FIB scanning window. The optional DrawBeam Automate module expands capabilities to include advanced functions like defining custom patterns, specifying patterning parameters for better optimization of processes and enabling automated batch processing.



↑ Cross section of a microelectronics sample prepared automatically using DrawBeam Automate.



↑ Example of silicon wet etching in KOH solution with applied etching mask prepared by FIB.



↑ Fabricated micropillar for mechanical stress testing of materials.

Key Benefits

Analyze and interpret your sample structure, elemental distribution and chemistry, including isotopic characterization, in 3D by employing TESCAN's unique Multimodal 3D FIB-SEM Tomography, which enables acquisition of EDS, EBSD and TOF-SIMS data during FIB serial cross-sectioning

Create site-specific cross sections and fabricate structures efficiently with DrawBeam's direct overlay function in the live FIB-SEM window

Prototype micro- and nano-devices like micropillars, cantilevers and microfluidic channels using the library of purpose-designed milling objects (lines, rectangles, circles, annuli, and polygons)

Tescan Essence™ DrawBeam

Perform complex multistep FIB milling and FIB and SEM deposition using the layer based, “CAD-like” interface of DrawBeam, which imports bitmap, GDSII or DXF formats and allows adjustments to parameters per layer and per object

Expand your single repetitive project to a multifield arrangement by taking advantage of DrawBeam Automate’s batch processing functionality for multifield exposure

Prepare nanofabricated structures from any material by referencing and editing the built-in materials database, which contains patterning settings such as exposure factor, line spacing and settle factor for different kinds of materials.

Support custom FIB-SEM sample preparation requirements by developing, modifying and saving complex recipes in the standard DrawBeam module.

Avoid drift when fabricating structures that require long exposures using DrawBeam Automate’s drift correction functionality

Produce artifact-free repetitive nanostructures by utilizing parallel or serial object patterning to prevent intersection of overlaying objects

Create three-dimensional nanopatterns like plasmonic half helix resonators and more using the widest range of gas injection precursors available, coupled with ion or electron beam-induced deposition (FIBID/FEBID)

Speed your milling processes during nanopatterning and nanofabrication with a choice of proprietary precursors to enhance the etching rate of many substrates

Improve overall surface quality and assure perpendicularity of cross sections and other nanofabricated structures such as cantilevers using controlled rocking movement capabilities in the DrawBeam Automate module¹

¹ TESCAN Rocking Stage required