EXPAND IT TO YOUR NEEDS

Flexible extensions

One of Scandium’s distinguishing features is how easy it can be expanded and used in combination with Soft Imaging System’s own highly specialized software extensions. These software extensions – called Solutions – expand Scandium’s range of function for solving specific scanning microscopy tasks. These include: metrological measurement methods; automatic particle analysis; stereo and 3-D visualization and analysis; and a whole array of automation possibilities.

You can create your own application. All Solutions can be combined with all other solutions. The base software required for all solutions is the Scandium SEM imaging platform.

SCANDIUM - UNIVERSAL SEM IMAGING PLATFORM

Scandium is Olympus Soft Imaging Solutions’ image analysis platform for scanning electron microscopy. Alongside SEM-specific functions, a performance spectrum for processing, analysis, visualization, image and data archiving as well as report generation is integrated.

What makes Scandium so attractive is its architecture, which is systematically oriented towards the requirements, needs and workflows of users in the scanning microscopy field. Scandium sets a new standard of excellence with enticingly simple, yet intuitive user interfaces, a range of functions that interact perfectly and a flexible and modular structure. The Scandium platform offers enormous latitude regarding image and data display. It ensures effective image and data processing in up to 3 dimensions.

Universal

Scandium ensures smooth data exchange with the SEM, FIB and EDS microscope software. A broad range of data from other typical SEM hardware and software components – such as X-ray devices of leading manufacturers – can be loaded into Scandium directly. Scandium is based on analySIS FIVE. This offers the user significant advantages. With other analySIS versions on the network, users have mutual access to each others’ data. User’s workstations and microscopes can be inter-connected. Comprehensive workflow structures linking individual microscopes and workstations can be set up.

Practical

With a mere click of a button, images are transmitted from microscope to Scandium. Images are calibrated automatically and include all microscope parameters. Within Scandium, the images can be processed, analyzed, archived and documented. Managing all results is done via an integrated archive and report generator allowing for professional presentation of results. Scandium controls connected devices, allowing complex processes to be automated. Ideally, the entire workflow, from first to last step, can all be conducted within Scandium.

Intercoordinated – One thing leads to another

Scandium’s basic range of function include everything that today’s digital lab scientist requires. The individual steps are all optimally coordinated with one another. Following acquisition, there is a wide range of options for preparing, visualizing and analyzing images and spectra. Full reports can be generated automatically and can be directly e-mailed within the Scandium software.

Desktop Licences

For every Scandium primary license, an unlimited number of additional desktop licenses can be purchased. Desktop licenses are identical to the primary license except they do not offer image acquisition. Once images and related data have been acquired on the microscope and stored in the reusable database, users simply go to their desktop PC to evaluate results, leaving the microscope available for others.
SCANDIUM SOLUTIONS

**SCANDIUM SOLUTION DETECTION**

The Scandium Solution Detection offers comprehensive particle analysis functionality. This solution offers high-performance multi-phase particle detection for quantitatively detecting and analyzing thousands of object images within seconds. Multiple particles are automatically detected using special separation algorithms. If these automated routines do not yield the desired results, special morphological filters and the Fourier filtering (FFT) for image optimization are available. When analyzing, there are numerous parameters available for each particle. Sheet results are linked to the corresponding particles within the image. Analysis can be restricted to ROIs (Regions Of Interest) if necessary. Any alteration to detection settings is conserved, executed and displayed immediately. Filter areas for various particle parameters may be defined and logically connected.

**SCANDIUM SOLUTION HEIGHT**

The Scandium Solution Height is for generating and measuring height information. The height maps can be created based on stereo image pairs or based on a series of images acquired at various focal levels. Height of a point on the height profile along a profile shape is measured. A height map can be displayed as a 3D reconstruction, making it easy for users to view from different angles. Based on specified objects, the software automatically calculates the geometric parameters of roughness and waviness. Roughness is measured according to DIN, ISO and ASTM standards.

**SCANDIUM SOLUTION METROLOGY**

The Scandium Solution Metrology is comprised of special functions for automatically measuring object structures. An automatic caliper tool is for fully automatic execution of recurring measurement processes and dimensioning on structured wafers and lithography masks. Integrated calibration routines for national and international standards such as ASTM, DIN and JIS. Other national or company standards can be included as well. The Scandium Solution Metrology handles all processing steps including sample positioning, measurement, analysis and metrological analyses. Very high standard inspection methods as well as geometrical parameters are supported for detailed size measurement. A high-performance software program for 3-D processing, display and evaluation of 2-D image information, 3-D supports all standard image types and image-file formats and can process arbitrary amounts of image information – both image stacks and image series.

**SCANDIUM SOLUTION X-RAY**

The Scandium Solution X-Ray combines several tools for dealing with microanalytical systems. Quantified and combined morphological and chemical information are examined automatically with this Solution. Creating macro images and chemical analysis can be performed automatically. The Scandium Solution X-Ray analyzes EDS spectra from the EDS system. It is used in conjunction with the Scandium Solution Detection, the coordinates of the detected particles can be used as positions for spectral acquisitions. The Scandium Solution X-Ray is a high-performance software program for active image acquisition with scanning microscopes (SEM). STEM means that up to 10 detectors may be used simultaneously for the acquisition of elemental mappings. Count rates can be displayed as false-color images.

**SCANDIUM SOLUTION AUTOMATION**

The Scandium Solution Automation provides a universally expandable application framework for fully automatic control of individual stages and quantitative analysis processes. Image acquisition, filtering, image processing, image analysis as well as data archiving and report generation can be automated. The integrated stage control supports specific user-defined positions as well as the scanning of entire sample surfaces. The Scandium Solution Automation also supports fully Automated position control. The software extension simplifies the most complex workflows by automating tasks such as line-width measurement. Entire wafers can be scanned automatically, single dies or clusters of dies as well.

**SCANDIUM SOLUTION DETECTION**

Using modern STEM-PD and beam devil the sample is situated on an electron source while the surface is examined with the beam. The result is an image stack containing information on the structure of the specimen. The Scandium Solution enables users to display and navigate within these 3-D image stacks. Various methods for displaying the 3-D objects can be supported, e.g. sum projection, iso surface and blending. Positions and distances can be interactively measured within the 3-D object. The Scandium Solution Volume includes the 3D Reconstruction application, a high-performance software program for 3-D processing, display and evaluation of 2-D image information. 3D supports all standard image types and image-file formats and can process arbitrary amounts of image information – both image stacks and image series.

**SCANDIUM SOLUTION METALLOGRAPHY**

The Scandium Solution Metallography combines various functions for analyzing metallographic samples quantitatively. It includes normal grain-boundary reconstruction. All analytical results are in accordance with national and international standards such as ASTM, DIN and JIS. Other national or company standards can be included as well. The Scandium Solution Metallography handles all processing steps including sample positioning, measurement, analysis, and metrological analysis. Very high standard inspection methods as well as geometrical parameters are supported for detailed size measurement. A high-performance software program for 3-D processing, display and evaluation of 2-D image information, 3-D supports all standard image types and image-file formats and can process arbitrary amounts of image information – both image stacks and image series.

**PROGRAMMING LANGUAGE**

The “Imaging C” programming environment is part of every Scandium solution. “Imaging C” provides the C programming language and high-performance image processing libraries (with more than 8000 commands). Windows API or external DIL commands are supported. The extension includes a compiler and a debugger. Programs created using Imaging C can be run as add-ins with any analysis-based products.