Shuttle & Find

Bridging the Micro and Nano World

The new "Shuttle & Find" solution from Carl Zeiss is a correlative interface for light (LM) and electron (EM) microscopes for use in materials analysis. It consists of specially designed sample holders, adapters and AxioVision based correlative software modules. The chosen point or region of interest (ROI) in the LM can easily be relocated and examined at much higher resolution in the EM by means of automated calibration and work routines. LM images can then be precisely extended by their morphological background and/or material distribution, e.g. with energy dispersive X-ray spectroscopy (EDS). However "Shuttle & Find" is a two-way system. If the investigation begins using the capabilities of SEM images, the same region of interest can be enhanced with the capabilities of LM. The highly flexible design is compatible with all current ZEISS SEM/CrossBeam® platforms and the Axio Imager, Axio Observer and SteREO Discovery families equipped with a motorized stage. Moreover, unique features such as charge compensation or variable pressure technologies greatly enhance this solution for the comprehensive imaging of non-conductive samples.

Features:

Shuttle (hardware solution):

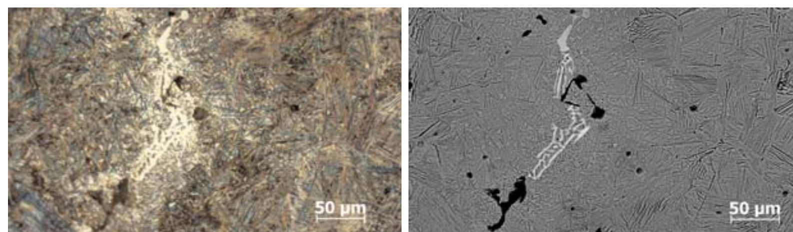
- Fast and easy sample transfer between LM and EM platforms
- No dismounting
- No coating – charge compensation, variable pressure (VP), extended pressure (EP)
- Compatible with all current ZEISS SEM/CrossBeam® and the Axio Imager, Axio Observer and SteREO Discovery LM platforms with motorized stage

Find (software solution):

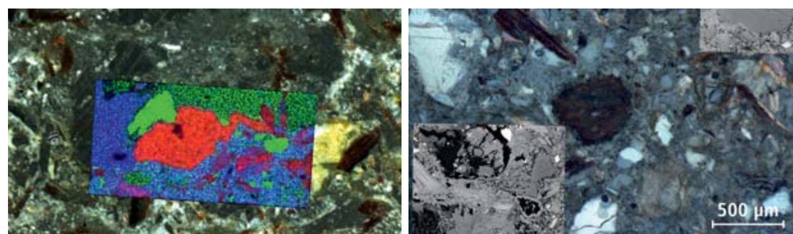
- AxioVision user interface for LM and correlative SEM control
- Instant and reliable recall of region of interest (ROI)
- Overlap and match function
- AxioVision functionality for LM and SEM/CrossBeam®
  - Image processing
  - Image analysis
  - Documentation

We make it visible.

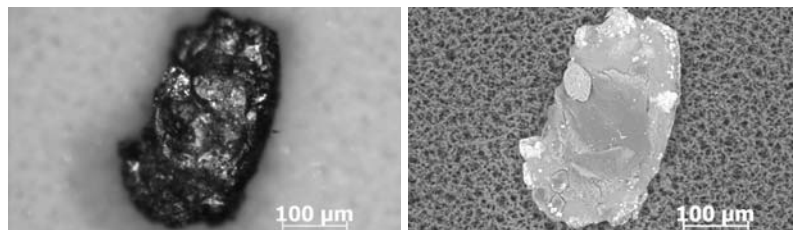
Correlative Microscopy Specifications	
Sample Sizes	Mount for three metallurgical specimens: - 1 specimen with d = 1fi" or 1 x d = 30 mm via adapter - 2 specimens with d = 1" or 1 x d = 1" and, via adapter, 1 x d = 1/2" Alternatively, specimen slides: 2 75 x 25 mm^2 specimen slides; mount for 2 SEM stubs with 1/2" surface and 1/8" pin
Relocation Accuracy	≤ 25 µm (coarse); ≤ 10 µm (fine) – depending on stages
Compatibility	Guaranteed with AxioVision 4.8.1 or higher, SmartSEM® V5.03 or higher (requires Remote API 2.4 or higher) Zeiss SteREO Discovery, Axio Imager, Axio Observer families equipped with motorized stages, all current ZEISS SEM / CrossBeam® platforms (correlative workflow between all microscopes)
Calibration	Manual or semi-automatic calibration of holders with automatic software detection of marks 100 ROIs / points for storage and recall per image ROI is automatically adjusted to the magnification level of the EM
Additional functionalities	Image overlay and match option

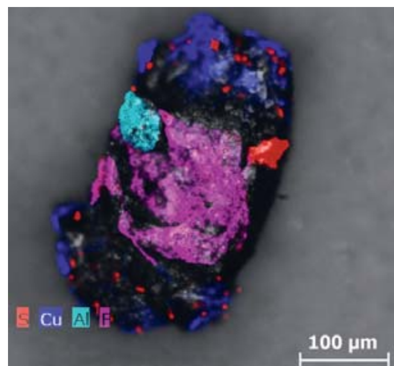


Light microscope image (left) of Austempered Ductile Iron (ADI) with the precipitation on the surface and a BSE image (right) of the relocated area in the SEM. Courtesy of C. Scherrer, ZHAW Institute of Materials and Process Engineering, Winterthur, Switzerland.



Light microscope images of Suevite breccia, where the relocated ROIs are extended through an EDS map (left) and corresponding SEM (BSE detector) images (right).





Metallic particle with complex chemical composition in brightfield LM (left) and BSE image (right).
Light microscope image is overlaid with corresponding EDS maps (bottom left).

Maximum Information – Maximum Insight

More than 160 years of experience in optics has laid the foundation for pioneering electron and ion beam microscopes from Carl Zeiss. Superior integration of imaging and analytical capabilities provides information beyond resolution, unlocking the best kept secrets of your sample.

With a broad technology portfolio Carl Zeiss provides instruments both tailored to your requirements and adaptable to your evolving needs. With our highly versatile application solutions we endeavor to be your partner of choice.

Superbly equipped, regional demo centers provide you with access to our applications expertise developed in collaboration with world-class partners in industry and academia. Global customer support is provided by the Carl Zeiss group together with an extensive network of authorized dealers.

Our mission at all times: Maximum Information – Maximum Insight.

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