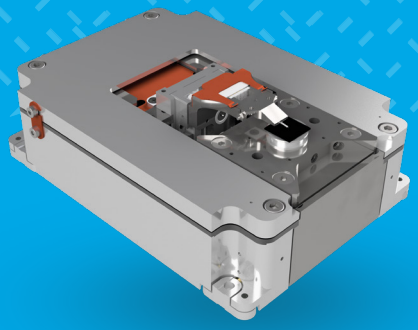
NenoVision

Next level of imaging

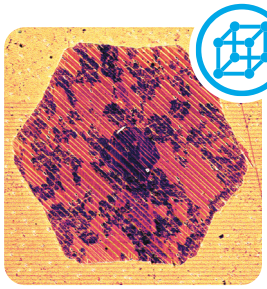
AFM-in-SEM LiteScope™

Unique applications

LiteScope has a range of unique applications. It is a great choice for measurement applications where **simultaneous utilization of an SEM and an AFM** is either **completely indispensable** or **vastly superior to** the use of **separate** conventional **instruments.**

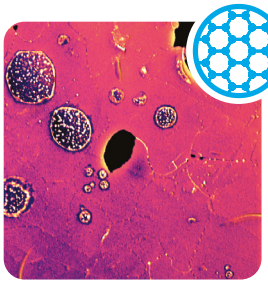


Application areas



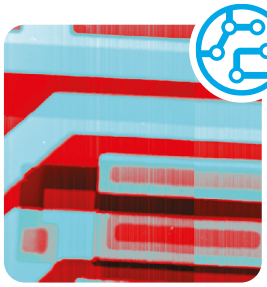
Material Science

- 1D / 2D materials
- Steel & metal alloys
- Batteries
- Ceramics
- Polymers & Composites



Nanostructures

- Modified surfaces FIB/GIS
- Quantum dots
- Nanostructured films
- Nano-patterning
- Nanowires



Semiconductors

- Integrated circuits
- Solar cells
- MEMS / NEMS
- Failure analyses
- Dopant visualization
- Current leakage localization

Life Science

- Cell biology
- Marine biology
- Protein technology

Key technology benefits

1 Complex and correlative sample analysis

Unique CPEM technology enables **simultaneous acquisition of AFM and SEM channels** and their seamless **correlation into 3D** images.

2 In-situ sample characterization

In-situ conditions inside the SEM ensure sample analysis at the **same time**, in the **same place** and under the **same conditions**.

3 Precise localization of the region of interest

Extremely precise and time-saving approach **uses SEM to navigate the AFM tip** to the region of interest, enabling its fast & easy localization.

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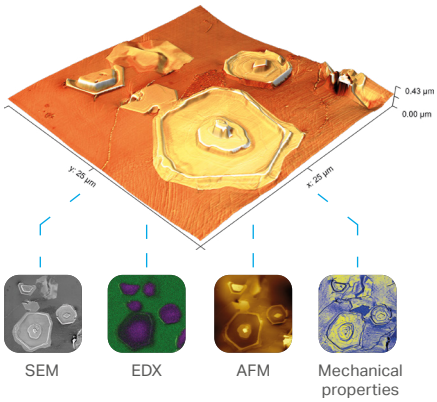
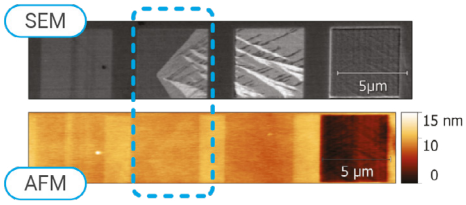


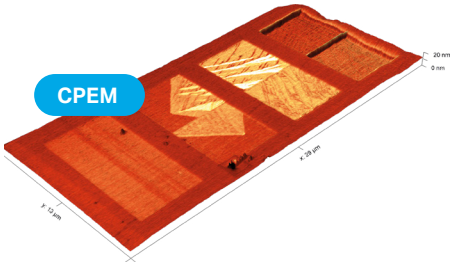
Complex analysis of 2D materials

Analysis of molybdenum carbide

Complex correlative imaging of an identical spot on the Mo_2C sample includes topography, EDX, conductivity and mechanical properties.

- **CPEM:** precise correlation of chosen AFM and SEM data
- **SEM-EDX:** fast nanostructure localization and elemental analysis
- **AFM:** topography, conductivity, mechanical properties



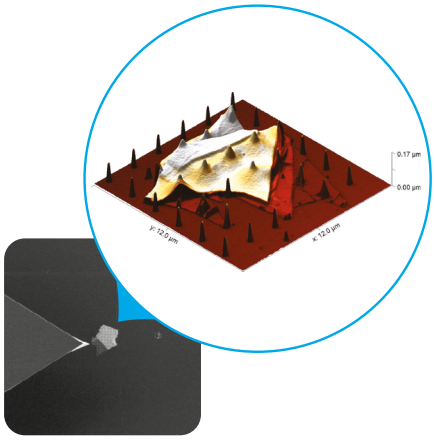


In-situ characterization of sensitive samples

Magnetic nanopatterning

In-situ AFM-in-SEM was necessary to selectively change the sample by Focused Ion Beam and immediately characterize magnetic properties of metastable $Fe_{78}Ni_{22}$ thin films.

- In-situ conditions – **FIB-induced transformation** of a sensitive sample had to be **characterized by AFM and SEM in in-situ conditions**.
- **Immediate and precise ROI identification** – small structural change at the FIB induced interface had to be analyzed by AFM.



Precise localization of the region of interest

WSe_2 flakes on silicon nanopillars

A certain shape of a WSe_2 flake monolayer over nanopillars creates a single-photon emitter.

- **Fast ROI localization by SEM**
- Difficult sample for AFM – combination of 1D and 2D materials
- **CPEM:** correlation of topography with monolayer resolution (AFM) and material contrast (SEM)

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