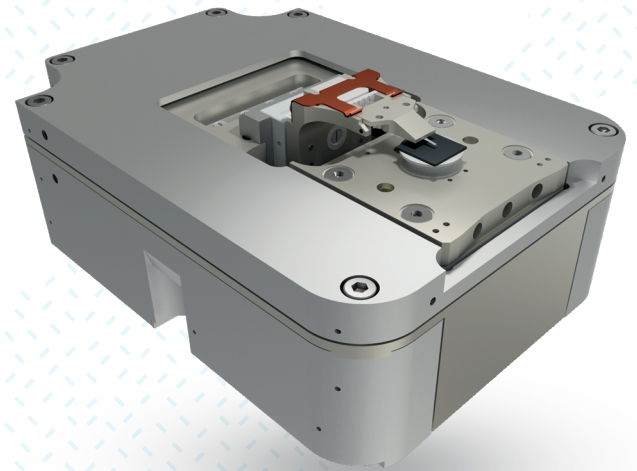




# CPEM Correlative Probe and Electron Microscopy™

Correlative microscopy enables a new insight into imaging of the nanoworld. AFM LiteScope™ brings a revolutionary approach into this subject. With LiteScope™, Scanning Probe Microscopy (AFM) and Scanning Electron Microscopy (SEM) can be correlated without limiting the imaging options of either system. Instead, advantage is taken of both sets of information.

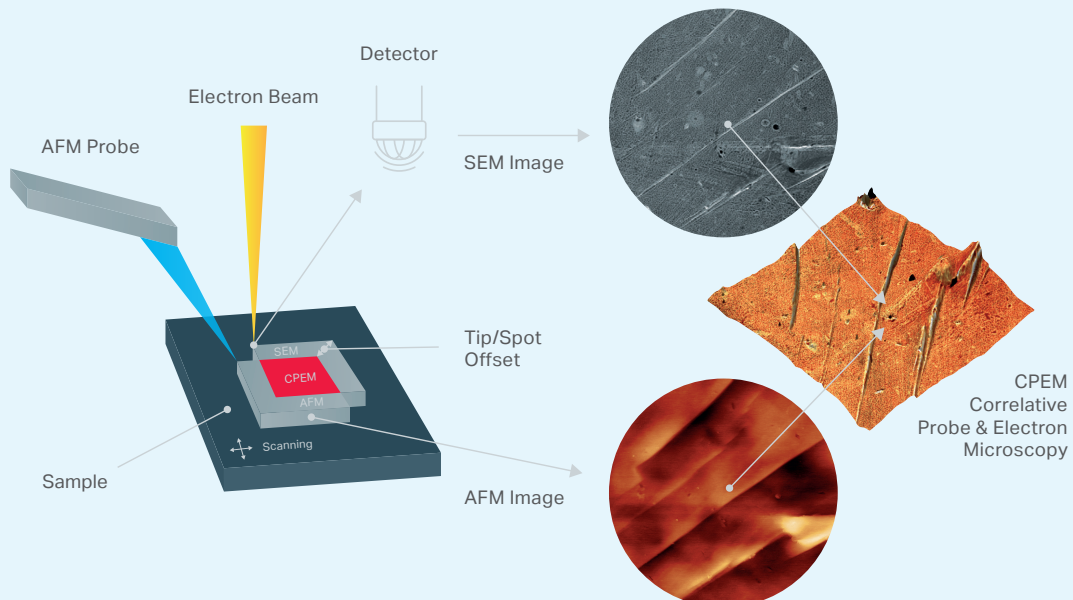
Correlative Probe and Electron Microscopy™ (CPEM) combines both AFM and SEM techniques. CPEM makes it possible to acquire both AFM and SEM images of the same area at the same time and in the same coordination system. Combining AFM and SEM imaging methods results in a wider information spectrum of the analyzed area, revealing possible equalities and inconsistencies in both images.



## Working Principle

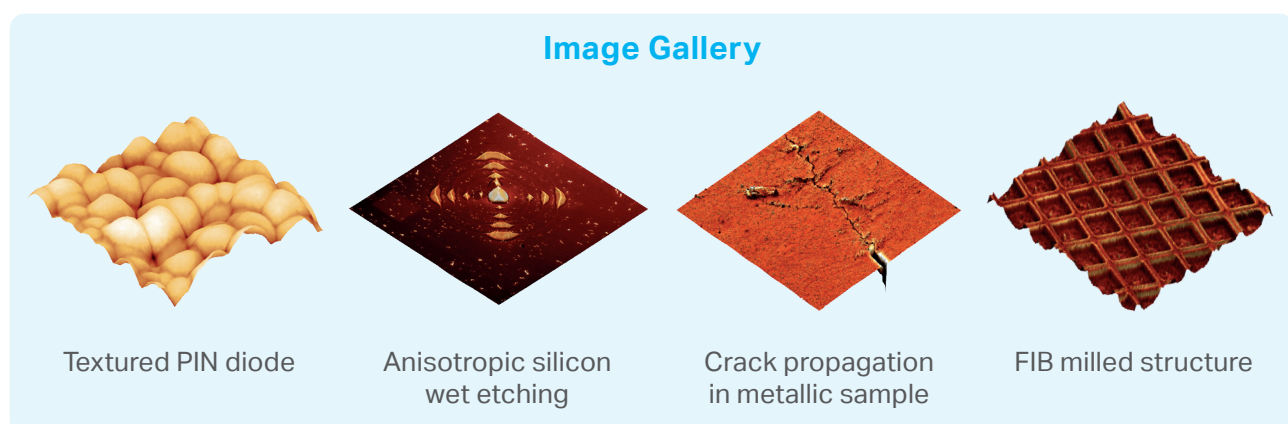
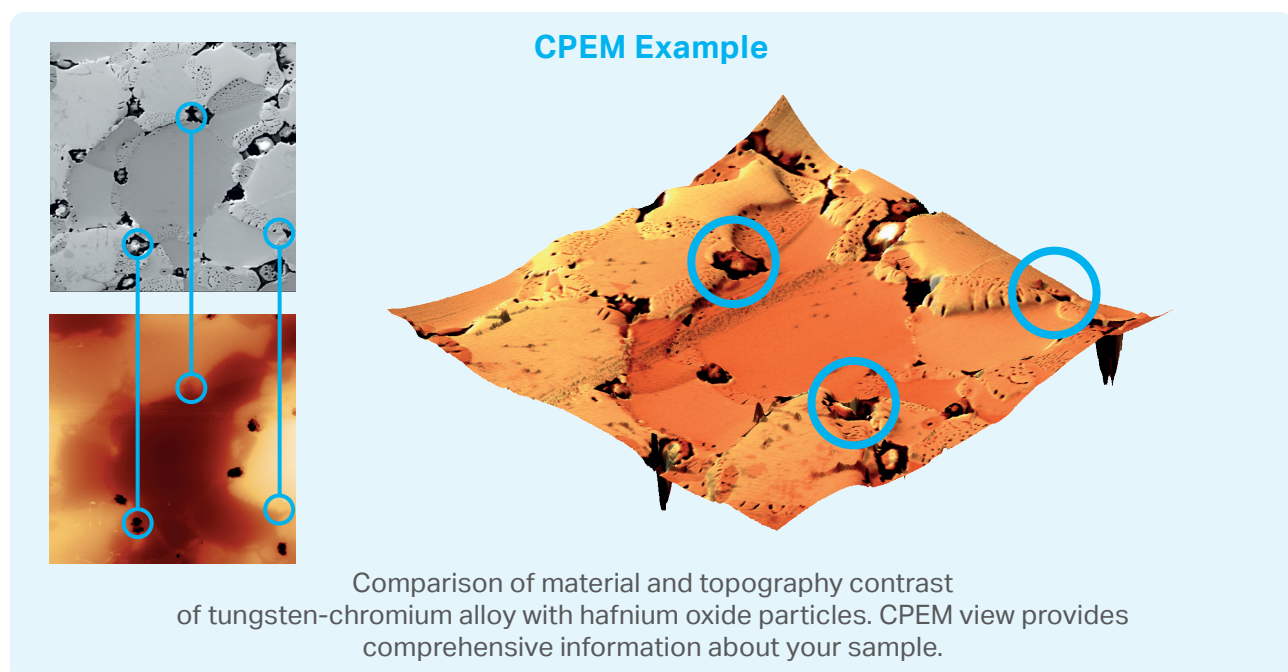
A sample is attached to a piezoelectric scanner. Both the electron beam focal point and the AFM probe are still during the CPEM image acquisition. The area of interest is scanned point by point by the piezoelectric scanner and signals from an SEM detector and the AFM probe are sampled simultaneously so that measurement takes place in the same coordination system. There is a constant tip/spot offset between the AFM tip and the focused electron beam in the range of hundreds of nanometers. If such a tip/spot offset is subtracted, SEM and AFM images with a perfect match and a superior correlation – a CPEM image – can be acquired.

## Scheme of CPEM – Correlative Probe and Electron Microscopy™



## Advantages of the CPEM technique

- CPEM provides multidimensional correlation imaging – images from a Scanning Electron Microscope are extended into 3D.
- Using CPEM, it is possible to quickly and accurately distinguish the topographic and the material contrast in SEM images.
- CPEM correlates, in an appropriate fashion, two or more SEM signals with the measured topography such as SE, BSE, EBIC, etc.
- CPEM makes it possible to measure AFM and SEM simultaneously under the same specimen conditions, at the same measurement speed, etc.
- The combined AFM and SEM scanning system enables an accurate image correlation, elimination of drift and other inaccuracies.



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