

The AFSEM™ - Correlated *in-situ* AFM & SEM & EDX analysis of nanostructured materials

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The AFSEM™ concept

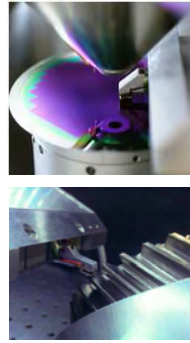


AFSEM™ correlated microscopy

AFSEM™ is a novel AFM platform specifically designed and developed for integration into other host systems, such as SEM or Dual-beam (SEM/FIB) microscopes. Its open design allows to simultaneously operate SEM/FIB and AFSEM™ inside the SEM/FIB vacuum chamber. The AFSEM™ is capable of imaging any sample your SEM or Dual-beam accepts.

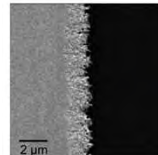
Main benefits:

- **Direct 3D information**
- **Correlated Microscopy** at highest SEM resolution of exactly the same sample position by SEM/FIB, EDX and AFSEM™
- **No air exposure of the sample** during interactive analysis by different methods
- **Nanometer Scale Analysis** before SEM sample contamination
- **Ease of Use** – No AFM laser alignment due to self-sensing cantilever technology
- AFSEM™ accepts **any Sample** the host system accepts

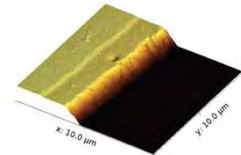


Applications

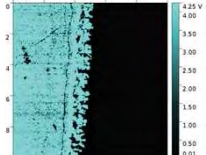
AFSEM™ enables directly correlated *in-situ* electrical characterization of nanostructures



SEM image of 150 nm Au structure.

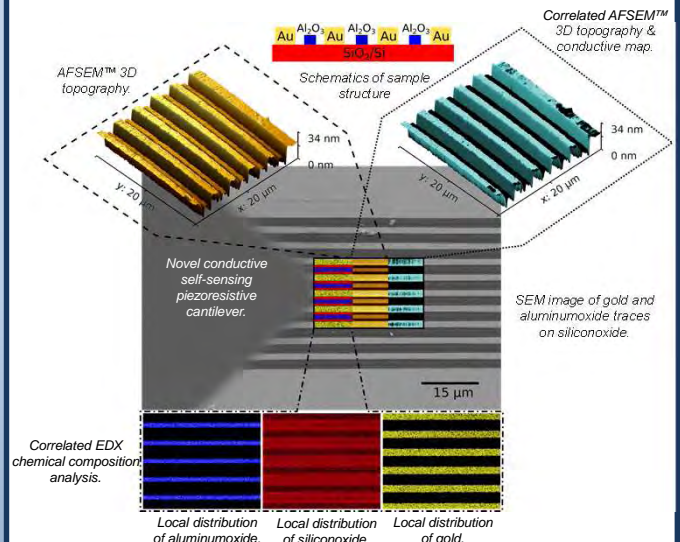


AFSEM™ 3D topography.

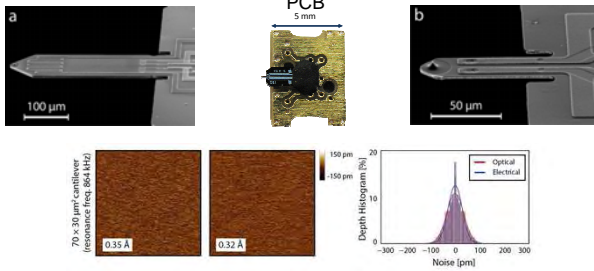


AFSEM™ conductive map.

AFSEM™ enables directly correlated *in-situ* AFM & SEM & electrical & EDX characterization of nanostructures



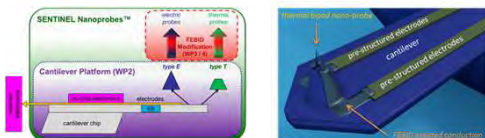
Self-Sensing Cantilever Technology



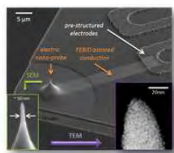
Electrical Noise Level of 0.32 Å for Self-Sensing Cantilever equals Optical Noise Level

M. Dukic, J. D. Adams and G. E. Fantner. *Scientific Reports* 5, 16393 (2015)

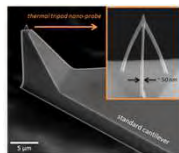
Novel modular Nano-Toolbox



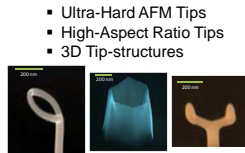
Conductive



Scanning-Thermal



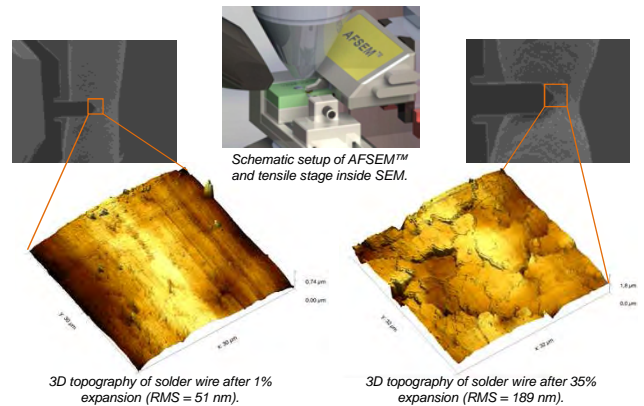
Customized



- Ultra-Hard AFM Tips
- High-Aspect Ratio Tips
- 3D Tip-structures

Next generation of Self-Sensing cantilevers enables unique correlated analysis by AFSEM™

AFSEM™ enables *in-situ* micro-mechanical testing with nanometer resolution.



Acknowledgments

Partners



Funding

