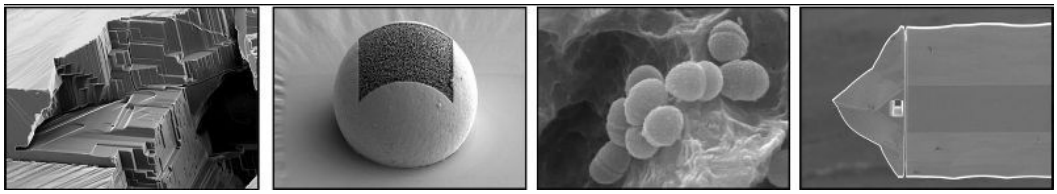
University of Basel
Swiss Nanoscience Institute

Swiss Nanoscience Institute
Exzellenzzentrum
der Universität Basel und
des Kantons Aargau

NANO IMAGING LAB

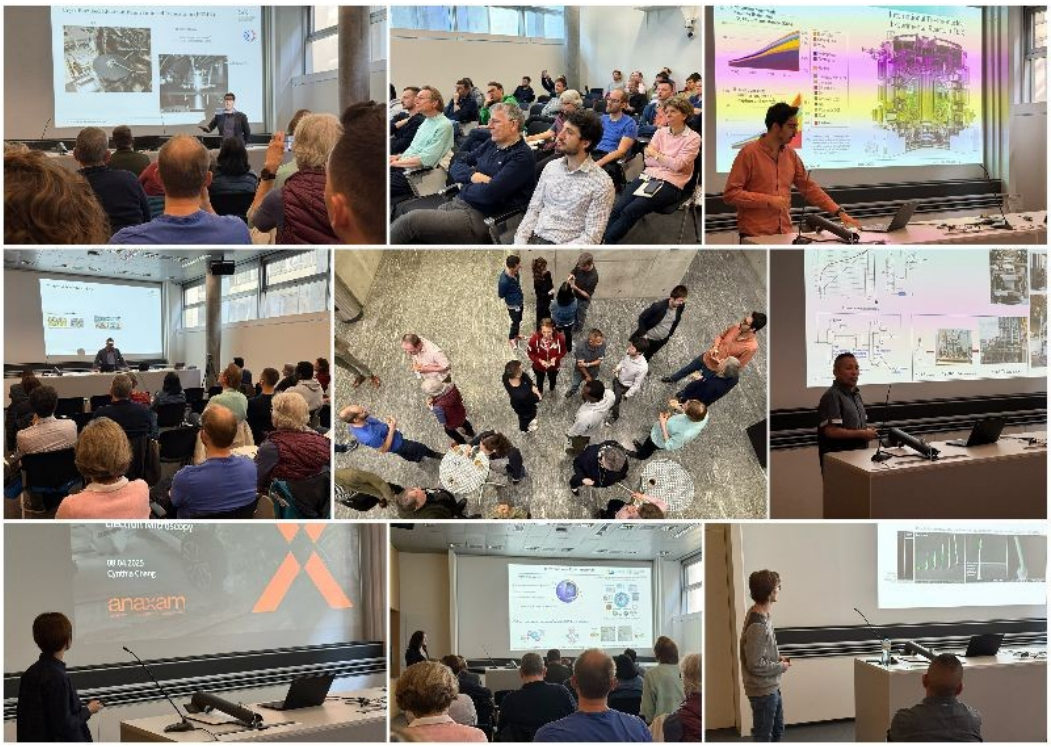
Newsletter

May 22, 2025



Nano Imaging User Event April 2025

An inspiring morning full of exciting insights into current research projects, using nanoimaging, again took place on April 8, 2025.
The program reflected the wide variety of scientific questions to which SNI's Nano Imaging Lab (NI Lab) is making valuable contributions with its images and analysis.



Topics ranged from cryo-focused electron beam deposition, plasma sputtering and EDX as well as magnetic force microscopy with tiny magnetic nanowires to the use of electron microscopy for the development of various biomedical applications such as core-shell nanoparticles, special polymer nanoparticles and the development of model systems for medical research from various bioengineered tissues.
The insights into the world of industry provided by Delta Mem AG and the technology transfer center ANAXAM were also interesting. Detailed electron microscopic images and analysis provide valuable information, that companies can use to optimize their products when it comes to questions about the durability, stability and resilience of existing products.
Of course, the networking aspect of the event was not to be missed, with coffee, inspiring conversations, and a tour of the NI lab! We look forward to the **next event on April 7, 2026**, with many more research projects, where nano-imaging plays an important role.

Many thanks to all speakers and participants for this exciting morning, which included great electron microscope images and analyses, that made the nano world "visible."

Further information about the SNI's Nano Imaging Lab – your partner for imaging and analyzing nanostructures.

New DriveAFM (Nanosurf) with rapid off-resonance WaveMode

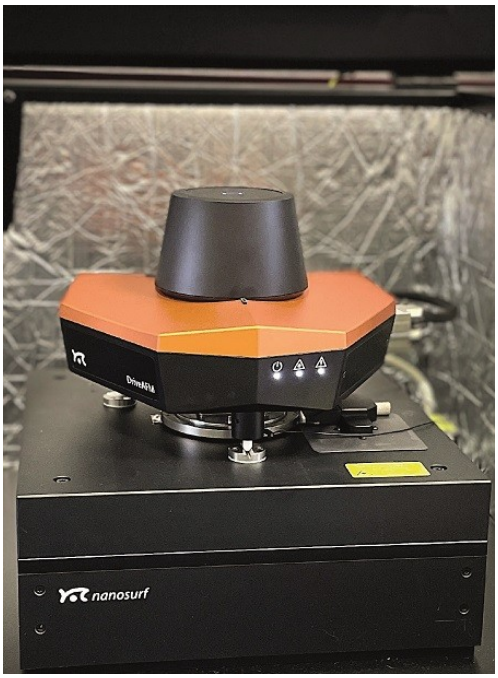
The new DriveAFM in lab 0.17 (Department of Physics) replaces the Dimension 3100 AFM from Bruker. It enables photothermal excitation of the cantilever and has new imaging modes, such as **WaveMode,** which is briefly explained as below:

In WaveMode, the cantilever is driven by the **CleanDrive photothermal excitation** at a low frequency (approx. 7% of its resonance) with an amplitude in the nanometer range. As the cantilever is directly excited by a second laser which is focused on the coated cantilever with bimorph effect, the observed cantilever deflection can be directly interpreted as a force and reconstructed into a force–displacement curve. The direct control enables a faster measurement rate and thus a higher imaging speed, which is only limited by the resonance of the cantilever.

WaveMode is an optimal tool for high-resolution imaging of 2D-materials in air or biological specimens in liquid, capable of capturing details such as the structure of single molecules. The scanning area extends over 100 x 100 x 20 µm³ and the automated stage enables navigation in the region of interest over an area of 200 x 200 mm².

The DriveAFM provides a variety of new and common AFM methods to characterize your sample:

- static force mode
- dynamic force mode
- phase contrast mode
- MFM (magnetic force microscopy)
- friction force mode
- force spectroscopy (nanomechanical analysis)
- force modulation mode
- EFM (electrostatic force microscopy)
- KPFM (Kelvin Probe force microscopy)
- PFM (piezoresponse force microscopy)
- C-AFM (conductive AFM)



For more information about the new DriveAFM and for sample measurements please contact Monica Schönenberger (monica.schoenenberger@unibas.ch).

Experiencing the salt

This year the Nano Imaging Lab and the Nano Fabrication Lab went on a corporate work outing. Together the two teams spent an enjoyable day in the Salina Helvetica in Pratteln.

Meeting at the beautiful location in Pratteln next to the River Rhine, the first part of the event took place at the museum "Salzkammer". The building was the villa of the former director Glenck, which was built in 1860 on the site of the pump house above the first two brine extraction points.

Inside the museum one can experience an exciting journey into the world of salt and find out how salt is extracted, processed and used. Visitors can experience the many different areas of human culture in which salt plays an important role. Salt blocks dating back thousands of years, historical salt vessels, wisdom and anecdotes remind us of the origins of the ‘white gold’.

After an extensive lunch break with good food at the 'Gasthof zur Saline' the teams took a short walk at the border of the Rhine.
The afternoon-tour continued into the Saline, where everything about salt extraction and the modern industrial processing was really nicely explained by the tour guide.

Having a great time and enjoying each others company, the group exited the Saline via the 'Salzberg-Slide', sending a big "Thank you!" to the SNI, who made this get-together possible.

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http://nanoimaging.unibas.ch