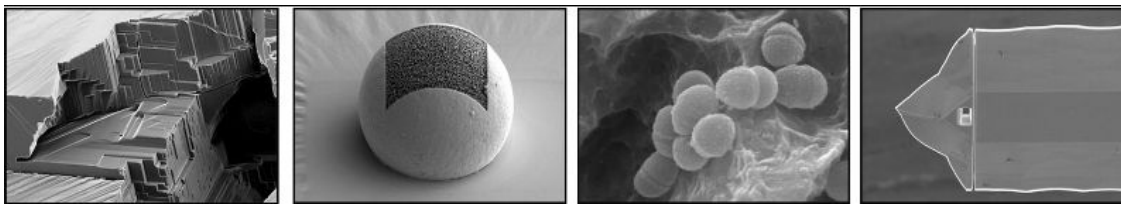
University of Basel
Swiss Nanoscience Institute

Swiss Nanoscience Institute
Exzellenzzentrum
der Universität Basel und
des Kantons Aargau

NANO IMAGING LAB

Newsletter

May 12, 2026



Nano Imaging User Event 2026 - An Exciting Array of Supported Research Projects

On April 14 an extremely interesting and engaging morning provided numerous striking examples of the central role that high-resolution imaging plays in modern research projects. This year's Nano Imaging Lab User Event 2026 offered users and interested parties from various departments and institutions a diverse insight into projects to which the Nano Imaging Lab, with its five-member team and infrastructure, has contributed.

Following a brief introduction by the head of the Nano Imaging Lab, Dr. Marcus Wyss, researchers from various disciplines gave concise presentations on their projects and demonstrated how imaging at the nano- and micrometer scales supports their work. The range of topics covered was impressive:

From the Department of Physics at the University of Basel, Katharina Kress presented the application of scanning SQUID microscopy for the investigation of two-dimensional magnetic materials. The NI Lab is particularly involved in the fabrication of so-called SQUID-on-lever systems using focused ion beam technology, which makes these highly sensitive measurements of minute magnetic fields possible in the first place.

The NI Lab also plays an important role in the production of key components for the Department of Chemistry: Fabian Zundel presented a microfluidic chip that can be used to study the dynamics of individual proteins. Both the Nano Imaging Lab and the Nano Fabrication Lab are involved in its production.

A presentation from the environmental sciences by Dr. Franz Conen focused on atmospheric particles that act as ice nuclei and play a central role in precipitation

formation. Scanning electron microscope images made it possible to identify a large number of such particles on which ice formation occurs even at temperatures between −5 and −10 °C.
There were also exciting insights in the field of applied medicine: Isabelle Imhof from the University Center for Dental Medicine Basel presented her work on the development of synthetic materials for bone replacement in dental implants and demonstrated how imaging contributes to structural characterization. Lukas Beckert from the Biozentrum at the University of Basel presented artificial nanopores based on DNA origami, which are modeled after natural nuclear pore complexes. High-resolution electron microscope images play a crucial role in the research of eye diseases, as Dr. Abigail Moye (Institute of Molecular and Clinical Ophthalmology Basel) impressively demonstrated using examples of hereditary retinal diseases.
The presentation by Boris Sevarika (Department of Pharmaceutical Sciences, University of Basel) highlighted the production of enzyme-loaded lipid nanoparticles for the treatment of diseases caused by enzyme deficiencies and demonstrated how their structure and function can be analyzed using scanning electron and cryo-EM imaging.
The development of test platforms based on printable electronics was the focus of the presentation by Dr. Jakoba Heidler (CSEM SA, Allschwil). Here, too, electron microscopic analyses make an important contribution to quality control and the further development of the systems.
The User Event 2026 has once again demonstrated how interdisciplinary collaboration and the use of state-of-the-art imaging technologies are pushing the boundaries of what is possible. It impressively underscores the central role of the Nano Imaging Lab as a connecting platform between disciplines—and as a driving force for innovative research on the smallest scale.

Of course, the networking aspect of the event was not to be missed, with coffee and inspiring conversations. We look forward to the **next event in April 2027**, 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.

The Future of Viticulture in the Upper Rhine Region: Innovation Meets Sustainability

The main focus of the closing meeting of the trinational WiVitis and KliwiReSSE projects at the University of Basel was how viticulture can address the challenges of climate change — while remaining sustainable and economically successful.

Project results clearly show the central role played by fungus-resistant grape varieties (PIWIs). They are often superior to traditional varieties in terms of climate resilience and disease susceptibility. Innovative analytical methods — from 3D scans to cryo-SEM examinations — provide new insights into grape resilience.

Genetic approaches also offer prospectives for breeding climate-resistant varieties specifically using wild grapevine genomes and new stress markers. Soil, an often overlooked factor, is equally gaining more attention. High microbial diversity in soil can significantly strengthen the resilience of vines.

Practical examples show that sustainable viticulture is already working today — for instance, through biodiverse cultivation systems, careful soil management and avoiding

pesticides. What remains clear, however, is that change takes time, education and acceptance.

🍷 Verdict following a wine tasting: PIWI wines are impressive — not only in terms of sustainability and long-term viability but also in taste.

Further expansion of the Nano Imaging Lab

The Nano Imaging Lab is very happy to announce that we were able to order a new Crossbeam 550L SEM from ZEISS. This new piece of equipment will be accommodated in Room U1039 in the Pharmaceutical Center, where renovations are already well underway in order to full fill all requirements for the instrument.
The delivery date is already set for September 2026 and commissioning is most probably expected in November.
The specialty of this device is a triple GIS system and it`s main application will be TEM sample preparation and nano fabrication.