

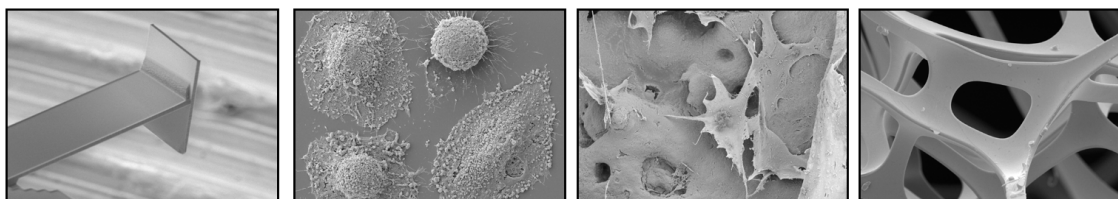
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NANO IMAGING LAB

Newsletter

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Upgrade for our FEI NOVA SEM: new EDX detector



At the beginning of May the NI Lab re-equipped the FEI NOVA REM with a high level Octane Elite Drift Detector from Ametek. This powerful device delivers highly sensitive measurements especially in the low kV range and for light element detection.

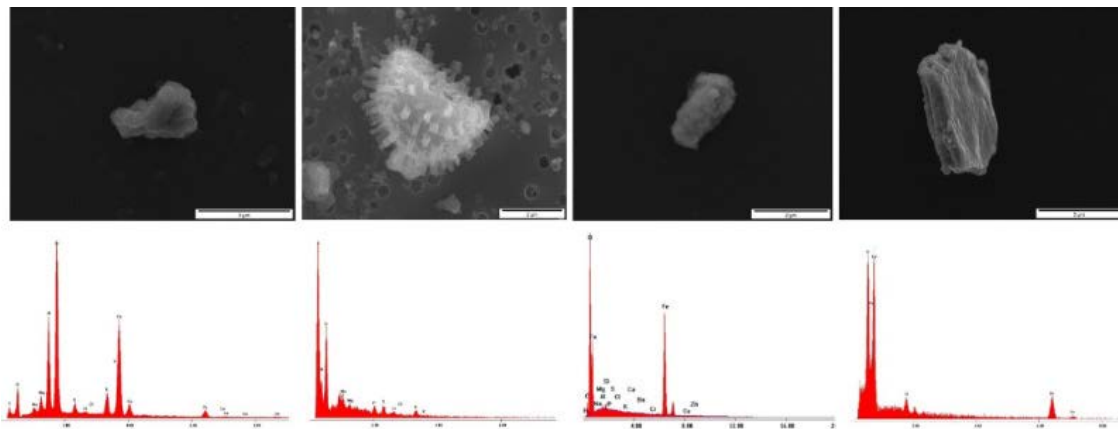
(photo: Daniel Mathys)

Octane Elite Silicon Drift Detectors

The game changing advancements in the Octane Elite EDS System with Octane Elite Silicon Drift Detector (SDDs) takes Energy Dispersive Spectroscopy (EDS)

analysis to the next level. This system includes detectors which incorporate a silicon nitride (Si₃N₄) window, offering remarkable improvements in low energy sensitivity for light element detection and low kV microanalysis. The Octane Elite detectors also use technology, which yields high speed X-ray data processing within a smaller and fully vacuum encapsulated detector device.

Particle classifier (PACLA) interpretes large datasets of airborne particle EDX-analysis



In cooperation with Dr. Juanita Rausch from Particle Vision GmbH in Fribourg, Evi Bieler from the NI Lab supported the automated SEM/EDX- analysis of airborne particle samples collected on Bor substrates. She assisted with the development and the testing of the automated measurements. The analysis itself were performed in the lab of Particle Vision in Fribourg, where the large amount of collected data was interpreted by PACLA, a particle classifying tool, developed by Particle Vision.

From this corporate project a poster was generated, which will be shown at the Microscopy Conference in Lausanne at the end of August :

Abstract:

A new model-based two-stage particle classifier (PACLA) for airborne particles analyzed with automated SEM/EDX

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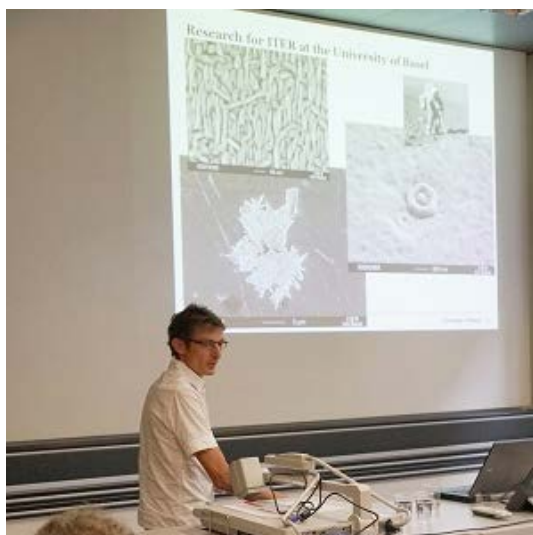
Particulate matter (PM) severely impacts environment and health. Automated Scanning Electron Microscopy (SEM) coupled with Energy Dispersive X-ray spectroscopy (EDX) measures elemental composition and morphological properties of hundreds of single particles per sample.

For interpreting these large data sets, we developed a two-stage classifier (PACLA). Particles are classified rule-based into main classes according to the elements present. The particles within these main classes are further subdivided into subclasses, based on the concentration of these elements using a model-based algorithm. These subclasses can be assigned to known compounds, making PACLA a powerful tool to apportion particles to specific sources

First User Event of the Nano Imaging Lab was a success

On June 28th 2017 the Nano Imaging Lab (NI Lab) invited their users and customers to an informative but also social meeting to the Pharmazentrum. Around 40 guests followed their invitation to get an insight into the versatile possibilities of this service unit of the University.

During the five scientific presentations it became very clear to everyone, how divers and valuable the service of the NI Lab is, not only for researchers of the University of Basel, but also for external companies, that have been using the facility since years. The pictures and analysis performed by the team of the NI Lab deliver an invaluable contribution to a huge number of different projects.



The NI Lab supports, for example, the work of Dr. Laurent Marot from the Department of Physics at the University of Basel on the mirrors of the planned fusionreactor ITER. The company Würth Elektronik also uses the service of the NI Lab since already ten years in order to analyse and evaluate their printed circuit boards and Dr. Lothar Weitzel praised their excellent cooperation.

(photo: Christel Möller)

In addition the NI Lab is perfectly equipped to examine biological samples, as Dr. Hanns-Heinz Kassemeyer from Staatliches Weinbauinstitut Freiburg demonstrated by showing impressive pictures of wine plants infected by powdery mildew.
(photo: Christel Möller)



Dr. Juanita Rausch from Particle Vision GmbH in Fribourg elucidated how the quality and the quantity of tiniest airborne particles can be analysed in the NI Lab, before the last speaker Timothy Camenzind from the Department of Physics explained how a magnetic force microscope (MFM) can be used to analyse nanomagnets.



(photos: Christel Möller)

During the following apero, guests had the opportunity to get in touch with other work groups and to exchange experiences and new ideas. Lively discussions with a glass of wine and Petit Fours made this meeting a pleasant experience for everyone..

The participants also had the chance to take a tour through the Nano Imaging Lab to have a closer look at all the equipment and instruments.

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