In this edition of the Topical Days on Imaging and Image Analysis, a special focus is put on the rapidly increasing availability and impact of **multi-dimensional** imaging methodologies with a broad variety of radiation types ranging from low-energy, infrared **light** to high-energy **X-rays** and **gammas**, **neutrons** and **electrons**. The **multi-dimensionality** feature, in this case, includes **time** enabling in-situ imaging of highly dynamic phenomena. Along with new possibilities, this increasing availability of multi-dimensional imaging capabilities opens up new challenges for the following **image analysis** objectives and tasks. The invited speakers will show recent advancements and developments in this field with each type of radiation.

The late afternoon session is dedicated to presentations of latest imaging/image analysis-related research and development work done at Empa, both in the field of X-ray imaging and in other fields/for other applications.

GENERAL INFORMATION

Location Empa
Überlandstrasse 129
8600 Dübendorf
AKADEMIE

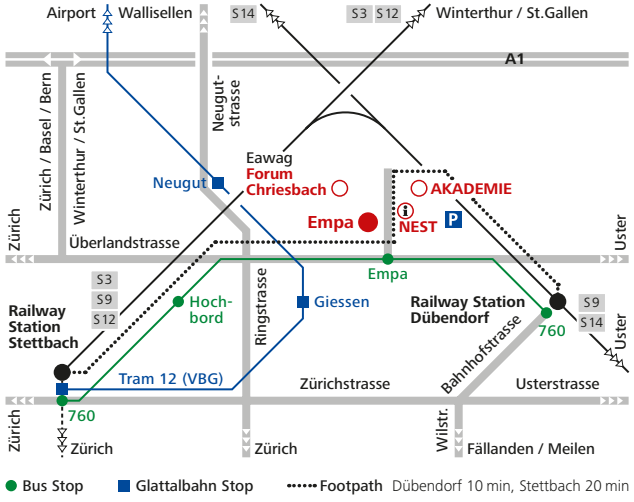
Costs The event is sponsored by Empa and free of charge.

Registration www.empa-akademie.ch/imaging
You will receive a confirmation by e-mail.

Deadline March 24, 2019

Contact Robert Zboray
Phone +41 58 765 46 02
robert.zboray@empa.ch
www.empa.ch/x-ray

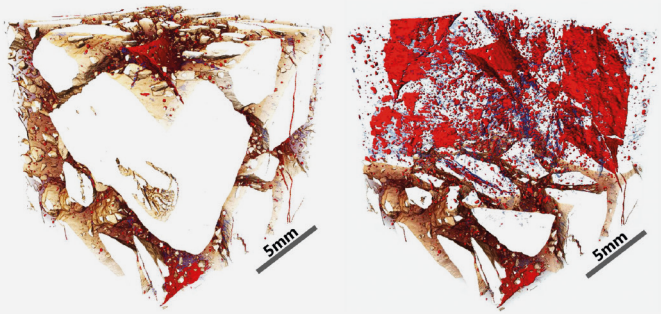
How to get here Please do use public transport.
There is only very limited parking available.



Empa
Akademie

TOPICAL DAY

Imaging and Image Analysis XI



Empa, Überlandstrasse 129, Dübendorf
Monday, April 15, 2019, from 8:30 to 17:30

Online registration:
www.empa-akademie.ch/imaging

TOPICS

Imaging, from electron microscopy, optical/infra-red imaging to X-ray & gamma/neutron radiography and tomography and more, as well as different methods and techniques used for performing image analysis.

TARGET AUDIENCE

Scientists, Ph.D.'s and post-docs working with different imaging techniques and image analysis procedures.

OBJECTIVES

The series of Topical Days on Imaging and Image Analysis offers to scientists, both of the ETH domain and of other public/private institutions, a platform for keeping abreast of the latest developments and for sharing experience in the fields of imaging/image analysis.

In this **11th edition**, the focus is **on multi-dimensional** imaging with **light**, **soft** and **hard X-rays**, **gammas**, **neutrons** and **electrons**.

PROGRAM

8:30 **Welcome Coffee, Registration**

8:50 **Opening Remarks**
Robert Zboray, Center for X-ray Analytics
Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

MORNING SESSION

9:00 **Lateral resolution enhancement and noise reduction of ToF-SIMS images**
Olivier Scholder, Laboratory for Nanoscale Materials Science,
Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

9:40 **Neutron Imaging**
Markus Strobl, Neutron Imaging and Activation Group, Laboratory for Neutron Scattering and Imaging,
Paul Scherrer Institute, Villigen (Switzerland)

10:20 **Coffee break**

10:40 **Imaging deep tissue with light**
Martin Wolf, Biomedical Optics Research Laboratory, Department of Neonatology University Hospital Zurich (Switzerland)

11:20 **TEM image denoising with deep convolutional neural networks**
Feng Wang, Electron Microscopy Center,
Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

12:00 **Lunch**

AFTERNOON SESSION

13:00 **X-ray Sources for High Throughput and Extreme Resolution Imaging**
Fei Yang, Excillum AB, Kista (Sweden)

13:40 **Dynamic tomographic imaging with X-rays and gamma rays and its application to industrial multiphase flow problems**
Uwe Hampel, Technische Universität Dresden, Institut für Energietechnik,
Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Institute of Fluid Dynamics (Germany)

14:20 **Beyond conventional X-ray grating interferometry**
Matias Kagias, Swiss light Source,
Paul Scherrer Institute, Villigen (Switzerland)

15:00 **Coffee break**

15:30 **Characterization of alkali-silica reaction damage in concrete by X-ray tomography**
Mahdieh Shakoorioskooie, Laboratory for Concrete/ Construction Chemistry, & Centre for X-ray Analytics,
Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

16:10 **Recent advances in FIB-SEM techniques for elemental, strain, stress and defect imaging**
Xavier Maeder, Laboratory for Mechanics of Materials and Nanostructures,
Swiss Federal Laboratories for Materials Science and Technology (Empa), Thun (Switzerland)

16:50 **Influence of yarn configuration on wicking processes studied by fast X-ray micro-tomography imaging**
Robert Fischer, Laboratory for Multiscale Studies in Building Physics,
Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

17:30 **Closing**