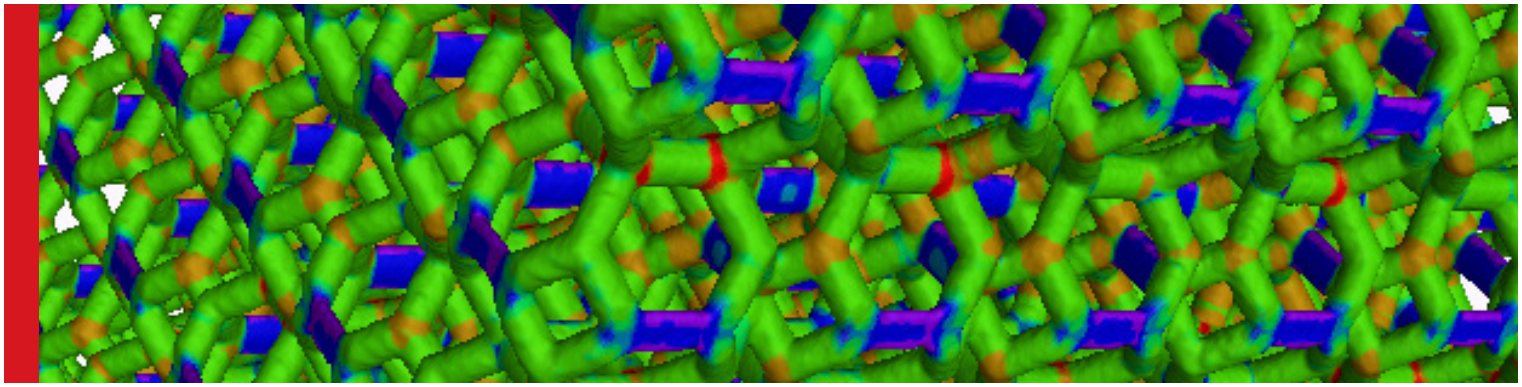
Empa Akademie

TOPICAL DAY

Imaging and Image Analysis XIII

Tuesday, 10 May 2022, from 8:30 to 16:50
Online event

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



Topics

Imaging, from electron microscopy and tomography, optical imaging to X-ray/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 methods. Anyone who is interested in learning about the latest developments in imaging and image analyses.

Objectives

The series of Empa Topical Days on Imaging and Image Analysis, an event of the **Research Focus Area "Health and Performance"**, offers scientists, both from the ETH domain and from 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 **13th edition**, the focus is broad involving **applications for life and material science** by different imaging modalities using light, electrons, neutrons, X-rays and their combination and the corresponding image analyzes techniques.

Imaging and Image Analysis

In this edition of the Topical Days on Imaging and Image Analysis, a special focus is on the applications of different imaging modalities for **life and material science problems**. It entails different **multi-dimensional** imaging methodologies ranging from microscopy by visible **light**, **X-rays**, **neutrons** and **electrons** and their combinations. Along with new imaging methods and the increasing availability of multi-dimensional imaging capabilities, new challenges open up for the downstream **image analysis** objectives and tasks. The invited speakers will show recent developments in these fields as well.
In both the morning and afternoon sessions, we will have a talk dedicated to scientific image analysis and image processing using ML methods. These very important methods can help us to make more out of imaging data and utilize them more efficiently especially in the life science realm. The program is organized to have a balanced distribution of talks of external speakers and talks highlighting Empa internal imaging research.

General Information

Location	Online event
Costs	The event is sponsored by Empa and is free of charge.
Registration	**www.empa-akademie.ch/imaging**
Deadline	**30 April 2022**
Contact	Robert Zboray, Tel.: +41 58 765 46 02 E-Mail: robert.zboray@empa.ch

Program

08:30 **Welcome**
Robert Zboray
Center for X-ray Analytics, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

08:40 **Opening Remarks : New Initiatives in Imaging**
Alex Dommann
Department Materials Meet Life, Center for X-ray Analytics, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

MORNING SESSION

09:00 **Unveiling the 3D vascular Architecture of the Meniscus using X-ray computed Tomography**
Federica Orellana
Center for X-ray Analytics, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

09:40 **Mesoscale Imaging of neural Dynamics and neuromodulator Release in the Mouse Brain**
Yaroslav Sych
Institut des Neurosciences Cellulaires et Intégratives (INCI), Strassbourg (France)

10:20 **Coffee break**

10:40 **Building Machine Learning Systems in the Era of data-centric AI**
Ce Zhang
Institute for Computing Platforms,
Department of Computer Science, ETH Zürich

11:20 **Electron Tomography of catalytic Materials**
Henrik Eliasson
Electron Microscopy Center, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

12:00 **Lunch break**

AFTERNOON SESSION

13:00 **Neutron Imaging in Electrochemistry**
Pierre Boillat
Electrochemistry Laboratory (LEC) and
Laboratory for Neutron Scattering and Imaging (LNS),
Paul Scherrer Institute, Villigen (Switzerland)

13:40 **In situ Microscopy in Materials Research**
Peter Schweizer
Mechanics of Materials and Nanostructures, Swiss Federal Laboratories for Materials Science and Technology (Empa), Thun (Switzerland)

14:20 **First Results from industrial Tomography on the BM18 Beamline at the European Synchrotron**
Simon Zabler
Faculty of Computer Science, Technische Hochschule Deggendorf, Fraunhofer Institute for Integrated Circuits IIS, Deggendorf (Germany)

15:00 **Coffee break**

15:30 **Next Generation Microimaging: From Synchrotron to Lab**
Jenny Romell
Exciscope AB, Kista, (Sweden)

16:10 **X-ray Tomography Imaging of the Pore Structure and acoustical Properties of low-noise semi-dense Asphalt Field Samples**
Peter Mikhailenko
Laboratory for Concrete & Asphalt, Empa, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

16:50 **Closing**