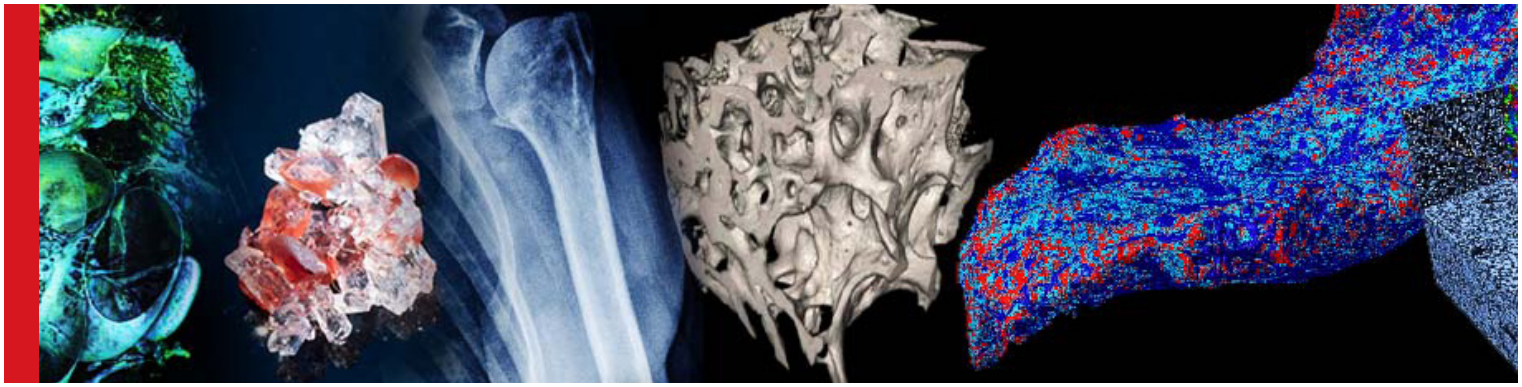
Empa Akademie

TOPICAL DAY

Imaging and Image Analysis XIV

Monday, 15 May 2023, from 8:30 to 16:50
Empa, Überlandstrasse 129, Dübendorf

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



Topics

Imaging by a multitude of modalities from electron, atomic force & optical microscopy, X-ray & neutron imaging, ultrasonic and focused ion beam techniques 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 broad platform for keeping abreast of the latest developments and for sharing experience in the fields of imaging/image analysis.
In this **14th edition**, we are very excited to be back with an in-person event after being three years online and offering an unprecedentedly broad scope of different imaging techniques involving and equally range of different **applications from material to life and medical sciences** and the corresponding image analyzes techniques.

Imaging and Image Analysis

This edition of the Topical Days on Imaging and Image Analysis, will present an unprecedentedly broad range of different methods, techniques and applications for **material, life and medical science problems**. It entails different **multi-dimensional** and **multi-modal** imaging methodologies ranging from microscopy by visible **light, X-rays, neutrons, electrons**, to chemical imaging by **focused ion beams mass spectrometry** and imaging by **ultra sound** 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 and tools available for the imaging community as well.
The program is organized to have a balanced distribution of talks of external speakers and talks highlighting Empa internal imaging research.

General Information

Location	Empa, Überlandstrasse 129, Dübendorf Empa-Akademie
Costs	The event is sponsored by Empa and is free of charge.
Registration	**www.empa-akademie.ch/imaging**
Deadline	**7 May 2023**
Contact	Robert Zboray, Phone: +41 58 765 46 02 E-Mail: robert.zboray@empa.ch

Program

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

MORNING SESSION

08:40 Using nanoCT to study structure-property relationships in functional metamaterials
Jakob Schwiedrzik
Laboratory for Mechanics of Materials and Nanostructures, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

09:20 Fundamentals of refractive index microscopy and its application
Sung Sik Lee
ScopeM: Scientific Center for Optical and Electron Microscopy, Swiss Federal Institute of Technology, ETH Zürich (Switzerland)

09:40 Neutron imaging techniques for additive manufacturing characterization
Florencia Malamud
Applied Materials Group, Laboratory for Neutron Scattering and Imaging, Paul Scherrer Institute, Villigen (Switzerland)

10:20 Coffee break

10:40 Development of a micro-CT scanner for virtual autopsy of fetuses and imaging of fetal development
Wolf Schweitzer[1], Sabino Guglielmini[2] & Robert Zboray[3]
[1]Zurich Institute of Forensic Medicine, University of Zürich,
[2]Department for Neonatology, University Hospital Zürich and University of Zurich,
[3]Center for X-ray Analytics, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

11:20 Advanced Transmission Electron Microscopy for Materials Research
Marta Rossell
Electron Microscopy Center, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

12:00 Lunch break

AFTERNOON SESSION

13:00 Protein imaging for understanding Alzheimer's disease biology
Peter Nirmalraj
Department Material meets Life, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

13:40 EPFL Center for Imaging: Development of Common Software Tools for the Imaging Community
Lauréne Donati, Matthieu Simeoni & Edward Ando
Center for Imaging, École Polytechnique Fédérale de Lausanne, EPFL (Switzerland)

14:20 Acoustic and Elastic Full-Waveform Inversion for Medical Ultrasound
Ines Ulrich & Patrik Marty
Institute of Geophysics, Swiss Federal Institute of Technology, ETH Zürich (Switzerland)

15:00 Coffee break

15:30 Imaging of Light Elements at the Nanometer Scale using fibTOF
Valentine Riedo
TOFWERK AG, Thun (Switzerland)

16:10 Speckle imaging: directional dark-field and developments towards tensor tomography
Ginevra Lautizi
University of Trieste (Italy) & Laboratory for Macromolecules and Bioimaging, Paul Scherrer Institute (Switzerland)

16:50 Closing