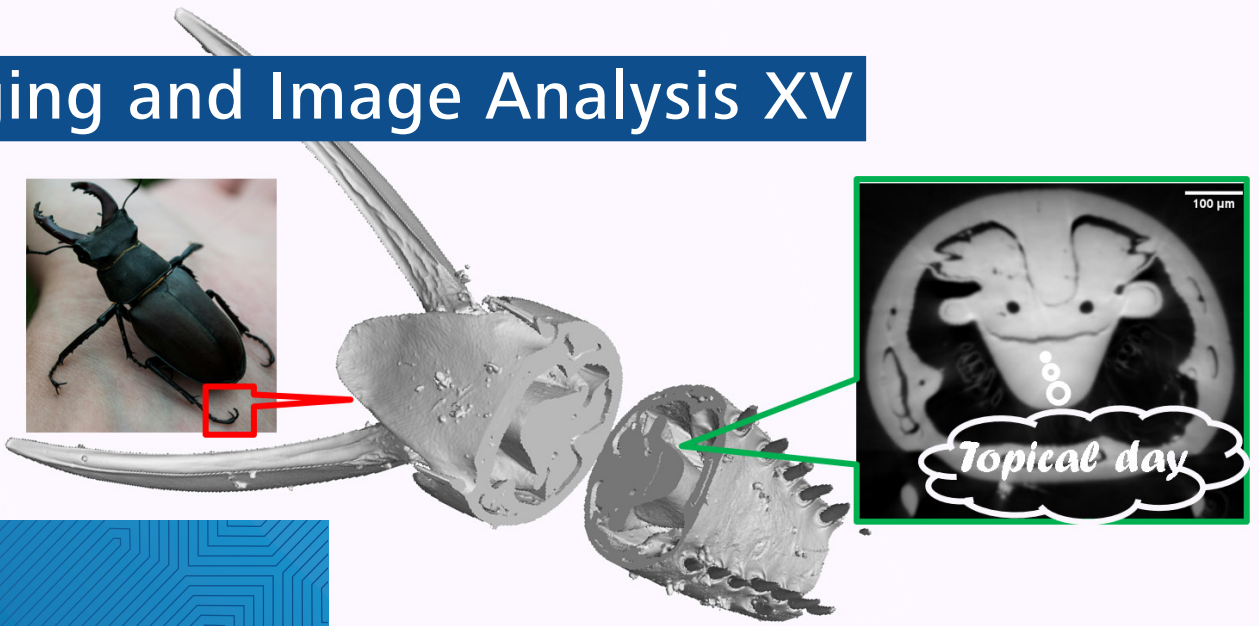


Imaging and Image Analysis XV



TOPICAL DAY

Thursday
16 May 2024

from 8:30 to 16:50

Venue

Empa, Dübendorf
Überlandstrasse 129
8600 Dübendorf

Online registration

www.empa-akademie.ch/imaging



Contact

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Topic

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 **15th edition**, we are very excited to offer again a broad scope of different imaging techniques distributed over different **applications from material to life and medical sciences** and the corresponding image analysis techniques, with an unprecedented number of talks addressing image processing by machine learning methods.

General Information

Fees: The event is sponsored by Empa and is free of charge.

Registration: www.empa-akademie.ch/imaging

Deadline: 10 May 2024

Imaging and Image Analysis XV

Imaging and Image Analysis

This edition of the Topical Days on Imaging and Image Analysis, will present a broad range of different imaging methods, techniques and applications for **material, life and medical science problems**. It entails different **multi-dimensional** and **multi-modal** methodologies ranging from imaging by **microwaves, visible light microscopy, X-rays, neutrons, electrons** to **chemical imaging and spectroscopy**.

The ever increasing resolution of modern imaging methods and the growing availability of multi-dimensional imaging capabilities, poses new challenges for the downstream **image analysis** workflow. Therefore apart from the imaging techniques, this year an unprecedented number of talks will address different aspects of the processing of those images by **machine learning and data science methods**. The invited speakers will present recent developments in these fields and tools available for the imaging community.

The program is organized to have a balanced distribution of talks by external speakers and talks highlighting Empa research.



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 3D imaging of aerogels and other porous materials

Wim Mailfait & Shanyu Zhao, Laboratory for Building Energy Materials and Components, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

09:20 Post-integration insights into "MetAssist":

A colorectal cancer lymph node screening model

Amjad Khan, Institute of Tissue Medicine and Pathology (ITMP), University of Bern (Switzerland)

10:00 Towards atomically precise nanoparticle size estimation using scanning transmission electron microscopy and generative AI

Henrik Eliasson, Electron Microscopy Center, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

10:40 Coffee break

11:00 Estimation of motion vector fields of complex microstructures by time series of volume images

Tessa Nogatz, Rheinland-Pfälzische Technische Universität, Department of Mathematics, Kaiserslautern-Landau (Germany)

11:40 Table-top soft X-ray microscopy – from design to application

Tony McEnroe, Sirius XT, Dublin (Ireland)

12:20 Lunch break

AFTERNOON SESSION

13:20 Recent progress and new trends in (hard) X-Ray based chemical imaging

Dario Ferreira Sanchez, Chemical Imaging Group and the microXAS Beamline, Laboratory for Synchrotron Radiation and Femtochemistry, Paul Scherrer Institute, Villigen (Switzerland)

14:00 Supervised algorithms for velocimetry and scalar quantification

Claudio Mucignat & Mattia Turchi, Laboratory for Computational Engineering, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

14:40 Coffee break

15:00 Quantification of processes in porous media

Anders Kaestner, Applied Materials Group, Laboratory for Neutron Scattering and Imaging, Paul Scherrer Institute, Villigen (Switzerland)

15:40 THz nanoscopy

Eleni Mavrona & Erwin Hack, Transport at Nanoscale Interfaces Laboratory, Swiss Federal Laboratories for Materials Science and Technology (Empa), Dübendorf (Switzerland)

16:20 Closing