

ACCESS TO EPFL

By the motorway

From Vevey or Genève, exit at Lausanne-Sud/EPFL. Parking is available on-site EPFL, one-day tickets (CHF10) are available from the “Accueil-information” Office

By Metro m1

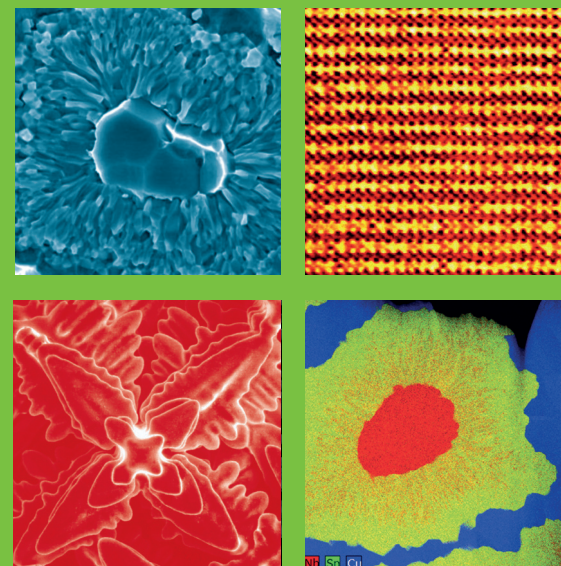
From Flon/Lausanne or the CFF train station in Renens, metro stop EPFL.

Signposting will be available on site.



CCMX SUMMER SCHOOL

Characterisation of Materials



28–30 August 2017

EPFL, Lausanne

TOPICS

Analytical SEM: EDX and FIB
Transmission electron microscopy and microanalysis
X-ray and neutron diffraction
Raman spectroscopy
Atom probe tomography
Scanning probe microscopy
X-ray fluorescence techniques
Time-of-flight secondary ion mass spectrometry
Tribology testing of surfaces
Instrumented nanoindentation
Surface analysis by XPS
Surface analysis by Auger
Characterisation of visco-elastic materials
Polymer mechanics
Fracture mechanics

WHO SHOULD ATTEND?

This summer school is open to participants with a basic background in materials science, mechanical engineering, chemical engineering, microtechnology or physics, from both industry and academia.

PhD students can validate this short course with 1 ECTS credit in the EPFL and ETH Zurich doctoral programmes, after acceptance by the corresponding institution. Full attendance and presentation of a poster are mandatory.

LOCATION

EPFL, Lausanne – Auditorium BC01 (see map on page 8).

DEADLINE

Course registration by Friday, 4 August 2017.



CONTACT INFORMATION

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PARTICIPATION FEES

PhD students from EPFL, ETHZ, Empa, PSI and CSEM: CHF300.-

PhD students from other institutions, other academic researchers and participants from companies involved in CCMX Materials Challenge: CHF400.-

All other participants: CHF1,500.-

Fee includes lunch and coffee. Additional VAT may be applicable. Travel and accommodation should be reserved and paid for by the participants.

WEDNESDAY, 30 AUGUST

- 8:30 **Characterisation of Visco-elastic Materials**
Véronique Michaud (EPFL)
- 9:15 **Polymer Mechanics**
Christopher Plummer (EPFL)
- 10:00 **Coffee Break**
- 10:30 **Elements of Fracture Mechanics**
John Botsis (EPFL)
- 11:15 **Roundtable discussion with the instructors**
- 12:00 **Lunch**
- 13:30 **Student presentations**
- 14:15 **Poster session and coffee**
- 15:30 **Concluding remarks**
- 15:45 **End of final day**



ROUND TABLE DISCUSSIONS

The round table discussions give instructors and participants an ideal opportunity to address specific questions. Participants may present a case using 2–3 slides to prompt the discussion.

POSTERS

The poster session scheduled for the final day is a means of encouraging constructive discussions and networking and all participants are invited to take part. Poster exhibitors are encouraged to highlight pending questions to be solved using characterisation.

To be eligible for 1 ECTS credit, participating PhD students must present a poster on their on-going thesis work and either illustrate how they use characterisation of materials, or how they would like to use the approaches. Instructors will be actively involved in discussions, evaluating the students' posters during a brief question-and-answer session. PhD students in the EPFL and ETH Zurich doctoral programmes who present a poster approved by the instructors will receive 1 ECTS credit after acceptance by the corresponding institution.

Abstracts of poster (300 word maximum) are required and must be submitted to Carey Sargent **no later than Friday, 11 August 2017**.

A4 mini-posters in PDF format should also be submitted to Carey Sargent after the participant's registration has been confirmed, and **no later than Friday, 18 August 2017**.

MONDAY, 28 AUGUST

- 9:30 Welcome + self-introduction by participants
- 9:45 Analytical SEM: EDX and FIB (+ESEM)
Marco Cantoni (EPFL)
- 10:30 Coffee break
- 11:00 Transmission Electron Microscopy & Microanalysis
Duncan Alexander (EPFL)
- 11:45 X-ray and Neutron Diffraction
Steven van Petegem (PSI)
- 12:30 Lunch
- 14:00 Raman Spectroscopy as a Non-destructive Characterization
Technique of Functional Materials
Anna Fontcuberta i Morral (EPFL)
- 14:45 Atom Probe Tomography
Stephan Gerstl (ETHZ)
- 15:30 Coffee break
- 16:00 Round table discussion with the instructors
Questions from participants
- 16:45 Student presentations
- 17:30 End of first day
- 18:00 Barbecue



TUESDAY, 29 AUGUST

- 8:30 Scanning Probe Microscopy
Laetitia Bernard (Empa)
- 9:15 X-ray Fluorescence Techniques for Analysis of all Types of
Materials
Didier Bonvin (Thermo Fisher Scientific)
- 10:00 Coffee Break
- 10:30 Time-of-flight Secondary Ion Mass Spectrometry (ToF-SIMS)
Laetitia Bernard (Empa)
- 11:15 Tribology Testing of Surfaces
Nick Randall (Anton Paar)
- 12:00 Lunch
- 13:30 Instrumented Nanoindentation
Nick Randall (Anton Paar)
- 14:15 Surface Analysis by XPS
Antonella Rossi (ETHZ)
- 15:00 Coffee break
- 15:30 Surface Analysis by Auger
Antonella Rossi (ETHZ)
- 16:15 Round table discussion with instructors/Student presentations
Questions from participants
- 17:00 End of second day

