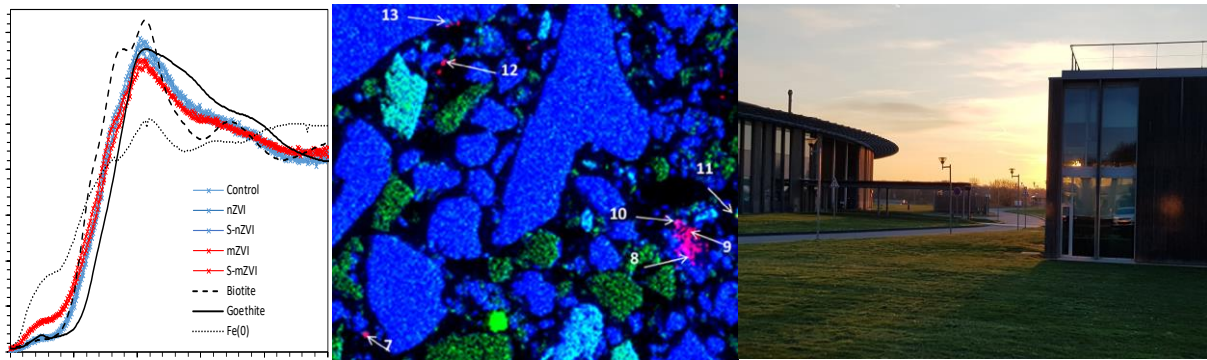


Synchrotron X-rays for Environmental Sciences, 4 credits



Synchrotron X-ray methods are of increasing importance in environmental science and nowadays they are part of many researchers' toolbox. There are many different X-ray methods; on this course we will focus mainly on microfocus imaging techniques (μ -XRF, STXM) and on X-ray absorption spectroscopy (EXAFS, XANES). The course will address the following questions:

- What are synchrotrons and what can you do at them?
- How do you access a synchrotron (e.g. applying for beamtime)?
- What is the basic theory behind microfocus techniques and X-ray absorption spectroscopy?
- How are samples prepared and run?
- How are the results treated and interpreted?
- How to present the results from a synchrotron X-ray experiment in a scientific publication?

The teachers will include **Ingmar Persson**, a pioneer in the use of synchrotron X-rays in Sweden, plus **Jon Petter Gustafsson**, **Carin Sjöstedt** and **Nithyapriya Manivannan** at SLU – Department of Soil and Environment, who all have considerable experience in the use of these techniques. Moreover, **Karina Thånell** and **Kajsa Sigfridsson Clauss** from MAX IV will contribute - there will also be international guest lecturers.

Course set-up

- Introductory lectures (hybrid format) when synchrotron methods are presented – April to early May 2025.
- Two-day visit/workshop at MAX IV in Lund on 6-7 May 2025 (SoftiMAX and Balder beamlines)
- Workshop on data treatment and interpretation techniques, SLU campus at Ultuna, 12-15 May 2025
- Literature assignments related to the PhD student's own research area, to be handed in no later than 31 October 2025

Prerequisites and access

The course is open to any interested PhD student with basic knowledge in an earth science or chemistry. The course is given in English. A maximum of 20 participants will be accepted; members of the SLU PhD school "Focus on Soils and Water" will be prioritized in case of overbooking.

Application

Potential participants should send an e-mail to jon-petter.gustafsson@slu.se no later than 2025-03-01. Please include the following details: your name, affiliation, and the title of your PhD project!

Learning platform

During the course, the Canvas platform will be used for messages, distribution of course literature etc.

Questions

For contact and addition information, contact:

- Jon Petter Gustafsson at the Department of Soil and Environment:
jon-petter.gustafsson@slu.se.