

**Time:** Monday Nov 1<sup>st</sup> 2021 – Friday Nov 5<sup>th</sup> 2021

**Target Group:** The Course is conceived for students at the PhD or Postdoctoral level with a Natural Sciences background.

**Syllabus:**

The purpose of this course is to train new or early users to design, plan, prepare, perform and analyze an x-ray absorption spectroscopy experiment at a synchrotron beamline. The course contains three major elements:

17h Lectures/seminars including:

1. Creation, interaction and measurement with/of X-rays
2. (Major focus) Concepts, Design and Analysis of XAS measurements
3. Large scale facilities (Balder specifically), proposal and publication of scientific results

17h (Guided) Practical data analysis training. This analysis will be performed with freely available tools and is intended to prepare the future users for independent work. This practical work is performed on provided data chosen for a specific learning outcome which include:

1. (Major Focus) EXAFS analysis of molecular and solid samples
2. XANES analysis of molecular, solid and nano particulate samples
3. Linear combination analysis in XANES/EXAFS of diverse mixed samples (earth, ash,...) and crystalline materials (e.g. CZTS)

7h (one Day) Practical (beamline) work including:

1. Sample preparation
2. Safety training
3. MAXIV tour
4. Measurement

The participants receive extended problems (about 12h working time) for continued work at the end of the initial one-week course. The analysis and discussion (guided by a consultation time) can be presented as home-exam to receive a certificate for 3 ETCS credits.

**Course teachers:**

Jens Uhlig, Lector at Lund University at Chemical Physics.

Lindsay Richard Merte, Senior Lector at Malmö University, Faculty of Technology and Society

Kajsa Sigfridsson Clauss, Justus Just, Konstantin Klementiev, Beamline Scientists at Balder and Susan Nehzati Postdoc at Balder

**Place:**

Course: LINXS (Lund Institute for X-ray and Neutron Science) and Chemical Physics Lund University

Experiments: Balder Beamline at the MaxIV laboratories

**Costs:** The course is free of charge for the participants. Due to restrictions during the present days can we offer 24 places for this first course. We are planning to hold this course annually.

We are at the moment trying to organise support for the living costs, but can not guarantee success at the moment.

**Registration and more information:** <https://www.chemphys.lu.se/xas-school/>

Deadline for registration: 20th of September 2021

The teachers will award the accessible places and inform you about your placement on the main or reserve list before the 30th of September.

**Practical EXAFS and XANES,  
Hands on Training in Design,  
Performance and Analysis of  
XAS Experiments**

