



FKF3430 Synchrotron Characterization Methods in Fibre and Polymer Technology - Practice

3.0 credits

Synkrotron karaktäriseringsmetoder för Fiber och Polymerteknologi - Praktik

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for FKF3430 valid from Autumn 2016

Grading scale

Education cycle

Third cycle

Specific prerequisites

Prerequisites:

M.Sc. in chemistry, physics or comparable areas. FKF3420 Synchrotron Characterization Methods in Fibre and Polymer Technology – Theory.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The aim of this course is to provide practical training in the application of synchrotron-based characterization methods, namely SAXS/WAXS/GISAXS/GIWAXS, in the framework of the PhD course. The methods instructed in the PhD course “Synchrotron Characterization Methods in Fibre and Polymer Technology” will be applied to current sample systems in fibre and polymer technology. The course will be held at the beamline PO3/MiNaXS at PETRA III, DESY, Hamburg, Germany.

After completing the course, you should be able to:

Perform standard sample alignment and data acquisition during an experiment at the beamline PO3/MiNaXS at PETRA III, DESY, Hamburg, Germany using standard

samples

Perform standard treatment of SAXS/WAXS/GISAXS/GIWAXS data

Quantitatively analyze SAXS/WAXS/GISAXS/GIWAXS data

Perform a fundamental, self-designed experiment with the possibility of an exemplary measurement of own samples.

Course contents

Course contents:

- Introduction to advanced scattering methods at PO3/MiNaXS, DESY, Hamburg
- Optimization of experiments during hands-on training at the beamline
- Data treatment of data taken during the hands-on experiments

Quantitative analysis of data using standard software

Disposition

Course organization:

Practical training at a beam line and subsequent data analysis during one week. One 2h lecture and 9 exercises. Mandatory presence at the training site.

Course literature

J. Daillant, A. Gibaud (Eds.): “X-ray and Neutron Reflectivity”, Lecture Notes in Physics, Springer, Heidelberg, 2009

T.A. Ezquerra, M. Garcia-Gutierrez, A. Nogales, M. Gomez (Eds.): “Applications of synchrotron light to scattering and diffraction in materials and life sciences.”, Lecture Notes in Physics, Springer, Heidelberg, 2009

Examination

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

Course requirements:

Completed exercises.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.