FKF3360 Polymer Microscopy 6.0 credits

Mikroskopi av Polymerer

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

Establishment

Course syllabus for FKF3360 valid from Spring 2014

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Basic knowledge about polymer science and engineering.

Language of instruction

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

Intended learning outcomes

The student will learn the basics of optical microscopy, scanning electron microscopy and transmission electron microscopy and how these methods are applied to different polymeric

materials. This includes preparation techniques (e.g. staining and etching) suited for different polymeric materials.

Course contents

· Optical microscopy: resolution, magnification principles, contrast, the basic two-stage microscope, lenses for different types of microscopy, polarized microscopy, conoscopy and diffraction experiments using the Bertrand lens, interference contact microscopy.

· Scanning electron microscopy, basic principles: resolution, contrast; different types of SEM

· Transmission electron microscopy, basic principles: resolution, contrast: different types of TEM. Electron diffraction

· Methods to prepare samples for optical microscopy.

· Methods to prepare samples for electron microscopy: fracture surfaces, staining, etching, beam contrasting, microtoming, shadowing

Practical work (exercise) using optical microscopy, scanning electron microscopy and transmission electron microscopy.

Course literature

Polymer microscopy, Chapter in textbook: Polymer Physics, U.W. Gedde, Springer Verlag (1995); Polymer Microscopy, 2nd edition, Edition, L. C. Sawyer and D. T Grubb, Chapman and Hall (1996).

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.

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

Written examination and approved exercises (6 hp). Schedule: 20h lectures; 10 h exercise is intended to be held every second year.

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.