



KF2210 Polymer Chemistry 7.5 credits

Polymerkemi

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 KF2210 valid from Autumn 2007

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Specific prerequisites

3E1501 Perspectives on material design 4H1065 Fundamentals of materials science and engineering

Language of instruction

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

Intended learning outcomes

Aim

After the course the student should be able to:

Explain the general reaction course, the reaction mechanisms and kinetics for stepwise and chain polymerisation, including, radical-, ion and coordination polymerisation and copolymerisation.

Calculate the degree of polymerisation, average molecular weight, average functionality, point of gel, kinetic chain length, the composition of the copolymer.

Draw structural formulas and tell about the properties of the most usual polymers.

Explain the principles for the most common characterization techniques.

Carry out simple polymer syntheses.

Practically determine the molecular weight of polymers with SEC and viscosimetry.

Present and critically evaluate a laboratory work in the form of a written report.

Course contents

The mechanisms of polymerization processes, kinetics and thermodynamics and their technical design are studied. Processes in gas phase (melt and solid phase), solution, emulsion and suspension, the use of homogeneous and heterogeneous catalysis, different initiation-, chain transfer- and termination reactions, isolation and processing of products, modification of polymers, oxidation, degradation and stabilization, characteristics in the polymer chain, the relation between structure and properties and a review of the most common polymers

Course literature

Polymer Chemistry - an Introduction, R.R. Seymour och C.E. Carraher, Marcel Dekker Inc.

Examination

- LAB1 - Laboratory Work, 2.2 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercises, 0.8 credits, grading scale: P, F

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

Written examination (TEN1) 3.0 c

Passed laboratory course (LAB1) 1.5 c

Passed exercise course (ÖVN1) 0.5 c

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.