



KF2130 Polymer Chemistry 7.5 credits

Polymerkemi

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

Establishment

Course syllabus for KF2130 valid from Autumn 2023

Grading scale

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

Education cycle

Second cycle

Main field of study

Chemical Science and Engineering, Chemistry and Chemical Engineering

Specific prerequisites

Bachelor's degree in engineering or in sciences including 50 credits in chemistry or chemical engineering. English B/6.

Language of instruction

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

Intended learning outcomes

After completing the course the student should
To pass the course be able to:

- Explain the general reaction course and reaction mechanism for common polymerizations
- Describe and compare the polymerization principles
- Calculate parameters and outcomes of polymerizations
- Evaluate polymerizations from a green chemistry perspective
- Practically perform different types of polymerizations
- Present and evaluate laboratory assignments in writing

To achieve higher grades than D be able to

- Explain the general reaction course and mechanisms for more advanced polymerizations
- Describe and compare the polymerization principles

Course contents

This course covers the most important polymerization reactions, focusing on their reaction mechanisms and kinetic aspects. The most common polymerizations include step growth polymerization and chain polymerization (radical, ion, and coordination polymerization). The course also includes more advanced polymerization techniques such as copolymerization, controlled radical polymerization, heterogeneous polymerization and ring-opening polymerization. Polymerization principles of bulk, solution, suspension, emulsion, and interface polymerization are discussed and compared. Each method presentation will cover the full spectrum from the theoretical understanding of detailed experimental procedures to examples of functional materials prepared by the specific method. Aside theory, the course also focus on calculations and predictions of important parameters and outcomes of polymerizations, including the degree of polymerization, average molecular weight, average functionality, gel point, kinetic chain length, rate constants, chain transfer, copolymerization composition etc.

Examination

- TEN2 - Written exam, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB2 - Laboratory Course, 3.0 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.

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

Other requirements for final grade

Active participation in all compulsory activities as specified in Course information.

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.