



FCK3324 Surfactant Self-Assembly in Bulk and at Interfaces 3.0 credits

Tensiders association i bulk och vid ytor

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

Establishment

Course syllabus for FCK3324 valid from Autumn 2023

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Eligible for studies at postgraduate level (PhDs and Post-Docs)

Language of instruction

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

Intended learning outcomes

After completion of the course the doctoral student / post-doc should have the knowledge and ability to

- summarize, interpret and explain surfactant self-association in bulk and at interfaces.
- summarize, interpret and explain foam film behavior and foams.
- summarize, interpret and explain structure and applications of lyotropic liquid crystals and microemulsions (complex fluids).
- explain and exemplify the efficient use of surfactants with benign environmental characteristics and the production of sustainable biosurfactants

Course contents

I. SURFACES, FOAM FILMS AND FOAMS

- From surfactant to foam – a short journey across colloid & interface chemistry
- Interactions in foam films – disjoining pressure of foam films
- Foam films and surface elasticity – do they correlate?
- From surfactant to foam – a short journey across latest research activities

II. SELF-ASSEMBLED SOFT MATTER NANO-STRUCTURES

- Lyotropic liquid crystals
- Microemulsions
- Macro-, Mini-, Micro- and Nanoemulsions: Who is who?
- Microemulsions as templates for mono- and bimetallic nanoparticles
- Gelled complex fluids – from cells to drug delivery systems

Examination

- TEN1 - Written exam, 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.

Written Exam – 3 hours

Other requirements for final grade

none

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.