



MH2283 Solidification Processing 6.0 credits

Stelningsprocesser

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

Establishment

Course syllabus for MH2283 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Materials Science, Materials Science and Engineering

Specific prerequisites

4M1336 Physics for Materials Processing, 5 cr, 4M1335 Materials Processing, 5 cr or equivalent.

Language of instruction

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

Intended learning outcomes

To give fundamentals on phenomena occurring at crystallisation of melts and gases.

Course contents

After completed course the student will have knowledge of:

- Crystallisation kinetics of melts and gases.
- Influence of the boundary structure on the kinetics.
- Forced dissolution in solid phase during crystallisation.
- Sub cooling of melts, homogeneous and heterogeneous nucleation in melts and gases.
- Facetted and dendritic growth, transition between these morphologies.
- Eutectic and peritectic reactions and transitions between these reactions in multi-component systems.
- Analysis of technically important crystallisation processes.
- Directional solidification in theory and practice.
- Production of a favourable texture.
- Single crystals.
- Composite materials.
- Thermal analysis.
- Directional solidification.

Course literature

H. Fredriksson, H. U. Åkerlind. Crystallisation Processing.

4M1336 Physics for Materials Processing, 5 cr, 4M1335 Materials Processing, 5 cr or equivalent.

Examination

- HEM1 - Homework, 1.5 credits, grading scale: P, F
- SEM1 - Seminars, 2.2 credits, grading scale: P, F
- TEN1 - Examination, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 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.

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

Other requirements for final grade

Written examination (TEN1;1,5 cr)

Lab work (LAB1:0.8 cr)

Home assignment (HEM1; 1,5cr)

Seminars (SEM1; 2,2 cr).

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.