FSK3889 Luminescence Spectroscopy of Semiconductors: Theory and Experiment 7.5 credits

Luminescens spektroskopi av halvledare: teori och experiment

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 FSK3889 valid from Spring 2017

Grading scale

Education cycle

Third cycle

Specific prerequisites

Enrolled as PhD student.
PhD students working with nanostructures and optical measurments with passed courses in:

- Solid State Physics
- Introductory optics, quantum mechanics

Language of instruction

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

Intended learning outcomes

After finishing the course students will be able to:

- Operate in semiconductor photophysics terms
- Distinguish between processes in nanostructured and bulk materials
- Implement these concepts in the description of practical devices
- Select most adequate luminescence technique for characterization of a particular system
- Examine optical properties of various systems using luminescence methods

Course contents

- Excitons and photons in luminescence
- Radiative and non-radiative recombination
- Stimulated emission
- Low dimensional semiconductors
- Experimental methods of luminescence spectroscopy

Disposition

8 seminars and laboratory work

Course literature

o Ivan Pelant and Jan Valenta “Luminescence Spectroscopy of Semiconductors”, Oxford University Press, 2012, ISBN 978-0-19-958833-6

Equipment

- micro PL: imaging and spectroscopy
- PL excitation
- time-resolved PL
- QE measurements
- low temperature measurements

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.

- Presentation at seminars
- Home assignment
- Laboratory work

Other requirements for final grade

- At least one approved presentation
- 60% of score for the home assignment
- Passed laboratory work with approved report

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.