

CH-340

Methods in spectroscopy and dynamics

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Cursus	Sem.	Type
Chemistry	BA6	Obl.
HES - CGC	E	Opt.

Language of teaching	English
Credits	3
Session	Summer
Semester	Spring
Exam	During the semester
Workload	90h
Weeks	14
Hours	3 weekly
Lecture	2 weekly
Exercises	1 weekly
Number of positions	

Summary

We will review modern technique for the determination of structure and dynamics in chemistry. Recent developments in spectroscopy as well as methods that target the fundamentals of chemical reactions will be discussed, and applications will be studied.

Content

Recent developments in spectroscopy
 Reaction dynamics experiments
 Control of chemical reactions
 Studies of dynamics in the gas phase, on solid/liquid surfaces, and in bulk liquid

Learning Prerequisites**Important concepts to start the course**

Quantum Mechanics
 Spectroscopy
 Kinetics

Learning Outcomes

By the end of the course, the student must be able to:

- Compare different techniques for spectroscopy and dynamics
- Decide on the optimum method for any given problem
- Judge the quality of spectroscopic and dynamic studies
- Describe different experimental methods
- Anticipate the outcome of a particular experiment
- Explain control concepts in chemical dynamics
- Decide on the optimum experimental method to tackle any given problem

Transversal skills

- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Demonstrate a capacity for creativity.
- Demonstrate the capacity for critical thinking

- Make an oral presentation.
- Write a scientific or technical report.

Expected student activities

Ask questions, read journal articles, prepare a ca. 45 minute presentation on a topic within the scope of the course, answer questions related to that presentation.

Assessment methods

Requirement: Oral presentation during the semester (not graded)

Grade: Paper on a specific question in the context of the topics discussed during the semester

Resources

Moodle Link

- <https://go.epfl.ch/CH-340>