

Module P 203: Advanced Methods in the Physical Chemistry of Polymers

(Fak225714)

Learning objectives:

The students will be introduced to theoretical and practical knowledge of advanced microscopic tools.

Course units and temporal allocation:

Module P 203 'Advanced Methods in the Physical Chemistry of Polymers' is comprised of the following course units:

	HPW	Semester
Lectures	2	SS
Laboratory Course	8	SS

This module will be offered by lecturers of physical chemistry.

Course content:

The **lectures** will present new complex experimental techniques which can be used in the study of soft matter, such as cryo-transmission electron microscopy, scanning electron microscopy, AFM force spectroscopy, surface force apparatus (SFA), total internal reflection microscopy (TIRM), fluorescence microscopy techniques (e.g. fluorescence correlation spectroscopy), scattering methods (e.g. neutron spin echo techniques (NSE) and grazing incidence small angle x-ray scattering (GISAXS)), and x-ray photon correlation spectroscopy (X-PCS).

The associated **laboratory course** will be done in the physical chemistry research groups and will introduce to the use of advanced scattering and microscopy equipment.

Entrance requirements:

Participation in P102 (Physical Chemistry of Polymers) is recommended.

Assessment:

An oral (or written) examination on the contents of the lectures after the second semester. This examination will amount to 50 % of the grade. The laboratory course will be evaluated by the average of three independent grades: practical performance, a written report, and a seminar, and amount to 50 % of the grade.

Work load:

In addition to the 2 HPW for the lecture, 2 hours are planned for individual studies. Accordingly, 4 additional hours are necessary for the preparation of the experiments and the protocol of the 8 HPW laboratory course. Given 15 weeks per semester this adds up to 240 hours. Together with 30 hours for the preparation of the final examination, a work load of 270 hours for the whole semester is calculated.

ECTS Credit Points: 9