

Module P 201: Polymer Architectures and Functionality

(Fak225723)

Learning objectives:

This module will enable the students to design polymers with well-defined structures based on living/controlled polymerization techniques, which are the prerequisite for cutting edge modern research. The students will learn the solution and bulk properties of polymers with selected architectures. Furthermore, students will learn modern techniques for the formulation with the aid of polymers, speciality processing techniques and the creation of advanced functionalities of polymers.

Course units and temporal allocation:

Module P 201 'Polymer Architectures and Functionality' is comprised of the following course units:

	HPW	Semester
Lectures	2	SS
Laboratory Course	8	SS

This module will be offered by lecturers of macromolecular chemistry.

Course content:

The **lectures cover** both macromolecular and polymer architectures. In the first part, the mechanisms of living/controlled polymerizations will be discussed in great detail with respect to the macromolecular engineering for the preparation of architectures, like linear, block, graft, star and dendrimers. The second part will cover details of several polymer architectures (films, particles, fibers) and special polymers and properties.

The associated **laboratory course** will be performed in one of the macromolecular chemistry research groups in collaboration with PhD students and postdocs. It will cover the synthesis and characterization of given polymer structures.

Entrance requirements:

Participation in P101 (Polymer Synthesis) and 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