

Module P 202: High-performance and Specialty Polymers

(Fak225725)

Learning objectives:

Organics and polymers have successfully entered and opened up new application fields and replaced other materials during the last few decades. In this module, the students will learn about the design, synthesis, and structure-property relation of high-performance and specialty polymers. Since a number of research groups at the University of Bayreuth are active in this research area, the students will be introduced to cutting-edge science in this field.

Course units and temporal allocation:

Module P 202 'High-performance and Specialty 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 macromolecular chemistry.

Course content:

In the **lectures**, the design, synthesis, and structure-property relation of organic functional materials and specialty polymers will be discussed with respect to advanced applications, such as energy storage, optics, information storage, photovoltaics, organic electronics, photolithography, and display technology. Special focus will be laid on the design, synthesis, and properties of conjugated polymers, transition metal- and main group-containing (supramolecular) polymers.

The associated **laboratory course** will be done in one of the macromolecular chemistry research groups working on high-performance organic materials and specialty polymers. The students will be introduced to the synthesis of new materials as well as their detailed physical characterization and application in devices.

Entrance requirements:

None.

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 amounts 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 HPW 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