

Module P 108: Biomaterials

Learning objectives:

This module focuses on bio-inspired materials and processes. The students will learn about structure, synthesis, and modification of biopolymers, including biomineralization. Furthermore, the students will gain a comprehensive insight in current research topics and industrial applications. The characterization and analysis of mechanical and structural properties of biomacromolecules plays also an important role in this module.

Course units and temporal allocation:

Module P 108 'Biomaterial' is comprised of the following courses:

	HPW	Semester
Lecture	2	WS
Laboratory Course	6	WS

This module will be offered by the chair of Biomaterials / FAN.

Course content:

A major objective of the **lecture** is the applications of nucleic acids, lipids, and proteins in nanotechnology, pharmacology, and industry. Furthermore, the course deals with the science behind the assembly of macromolecules, the biomineralisation process and their man-made imitations. Important characterization methods, such as field-flow fractionation, CD-, UV-, IR- and fluorescence spectroscopy, AFM, EM, HPLC, and mechanical testing are presented. Additionally molecular and microbiological methods and techniques are introduced.

The **laboratory course** puts the students in a position to apply these methods for instance on spider silk, mussel collagens, and yeast proteins.

Entrance requirements:

none

Assessment:

The module will be evaluated by an oral or written examination (60%) and the evaluation of the laboratory course consisting of the practical performance and a report (40%).

Work load:

In addition to 2 hours of lecture, 2 more hours are necessary for the preparation and the review of the lecture. This will add up to 60 hours for the entire semester. The laboratory course accounts for 120 hours. Furthermore, preparations for the examination are estimated to additional 30 hours. This adds to a sum of 210 hours.

ECTS Credit points: 7