General Information

Module Title	***Macromolecular Science (for Beginners)***
Tutor Name(s)	*A. Lendlein, M. Schroeter, A.T. Neffe*
Location where module takes place	*GKSS -Forschungszentrum Geesthacht GmbH* *Institut für Polymerforschung* *Kantstr. 55, 14513 Teltow* *lecture hall, house D* *31 August to 4 September, 08:30 to 14:30*

Suitable for the tracks	☒ *Biology/Biochestry Track* ☐ *Chemistry/Physics/Engineering Track* ☒ *Clinical Scientist*		
Type	*Lecture;*	**Level**	*beginner*
Days	*5*	**Max. Participants**	*20*

Objectives this module

Macromolecular Science

Poymers are frequently used as biomaterials. They can be tailored to special demands in several applications.To decide if a polymeric material is uesful in an application it is necessary to know how it is build and its properties can be adjusted. This modul introduces basic knowlede in the preparation of polymers. Which are the basic chemical concepts and reactions to form macromolecules. Which kind of functional groups can be used to form a polymer and how to polymerize? How can the properties of polymers be influenced during preparation?
The module includes the introduction of basic concepts in organic chemisty, reactivity of bonds and functional groups,.and polymerization reactions. It shows further which compounds are used during preparation and why some shoud be avoided during polymerization, because of their toxic behavior.
The course starts with an introduction and explains all basic reactions and important terms like monomers, molecular weight distribution or polydispersity, as well as macromoleculer structures and architectures. It explains chain- (free radical), step growth, insertion (coordination), ring-opening and so called living polymerization reactions to synthesize polymers.
The basic synthetic and analytical techniques will be presented and shown in the lab.

Which course materials, software, or instruments do students use in this module?

Handout of the course will be provided

What are the prerequisites for taking this subject?

Basic chemistry course in school.