

Lecture Announcement

Winter Semester 2026/27

Sustainable Materials & Selection

Lecturers:

Prof. Dr.-Ing. Markus Gallei

Prof. Dr. Guido Kickelbick



SUSTAINABLE MATERIALS

Lecture Series by Markus Gallei and Guido Kickelbick

Further information:Scope and Credits: 2 SWS (3 CP)Lecture: Monday – 12:30 p.m. - 2:00 p.m.Start: October 19, 2026Location: Seminar Room I, C4.3**QR-Code Moodle:****Learning Objectives:**

General knowledge of environmental problems associated with sustainable material classes such as metals, ceramics, sugar, cellulose, lignin, polymers and many more; also classification of knowledge of various options for solving environmental problems and promoting sustainability; basis for critical presentation of pollution caused by (micro)plastics and marine litter, highlighting the problems, clarification of common terms (biocompatible, bioavailable, biodegradable, compostable, etc.). Established and new approaches to using materials sustainably

Content:

The event covers the basics of sustainable materials and material classes as they typically occur in nature and can be used (after treatment). Overview of availability, extraction, purification, basic aspects of processing renewable materials; definitions of terms in the field of sustainable materials; Focus on organic sustainable materials (organic molecules, polymers/plastics, cellulose & paper, textiles); inorganic materials (steel, aluminum, cement/ceramics, rare earth metals) are covered for the sake of completeness and presented in case studies; Characteristic structure-property relationships and property profiles of materials made from renewable raw materials; new materials made from renewable raw materials with a focus on packaging and, in some cases, biomedicine; brief overview of the degradation and recycling of organic/inorganic materials, raw materials and recyclables; consideration of CO₂ cycles and balances of sustainable materials; Presentation of current approaches and critical analysis; Consideration of water cycles in the treatment, creation and regeneration of sustainable materials.

Information:

All information about the event will be provided in person, with additional information available on Moodle. Furthermore, after each session, you will have the opportunity to download the lecture and additional content as files