



Hochschule Bremen /
HSB - City University of
Applied Sciences

The Biological
Materials Group

Foundation

- 2007

Branches

- Research and development

Key materials

- Bio-inspired materials
- Bio-based materials
- Biomimetic materials
- Natural fibres
- Natural fibre-reinforced polymers

Key services

- Research & studies
- Material & product development
- Material testing
- Research cooperation
- Research assignment



HSB

The Biological Materials Group ✕

Faculty 5 / Biomimetics

Hochschule Bremen

THE BIOLOGICAL MATERIALS GROUP

The Biological Materials Group of Prof. Dr.-Ing. Jörg Müssig is a group of highly motivated scientists with different background working on topics all around bio-inspired and bio-based composites and the value added chain of natural fibres.

Therefore we focus on:

- Development of concepts for sustainable materials
- Relation of structure and properties in materials
- Bio-inspired & Biomimetic materials
- Insulation products
- Natural fibres & Natural fibre-reinforced composites
- Adhesion & Interphases

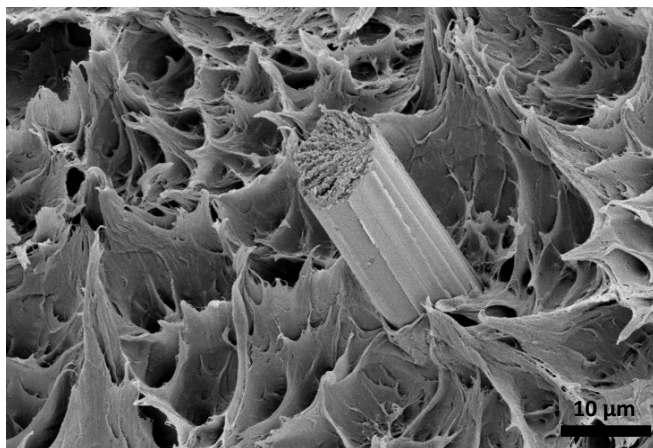
Research topics

An important research focus in the field of “Biological Materials” is the development of sustainable materials along the value added chain from the raw materials production to the final product in combination with biomimetic aspects. For example, we are looking for interesting structures in nature, which display very good specific properties like impact or stiffness and transfer them in an abstracted form into a technical composite. In this way the petioles of red rhubarb taught us a structural construction for the improvement of the impact characteristics of technical cellulose fibre-reinforced composites.

For the production of the bio-inspired composites we try to use materials produced from renewable resources like natural fibres or regenerated cellulose fibres as reinforcement and biodegradable polymers such as PLA or PHB.



Natural fibre-reinforced semi-finished products and composites.



Regenerated cellulose fibre in an „ocean of polymer“.
(Photo: Milan Kelch)



The Biological Materials Group

Contact

HSB - City University of Applied Sciences
Faculty 5 – Biomimetics
The Biological Materials Group

Neustadtswall 30
D-28199 Bremen

Contact person

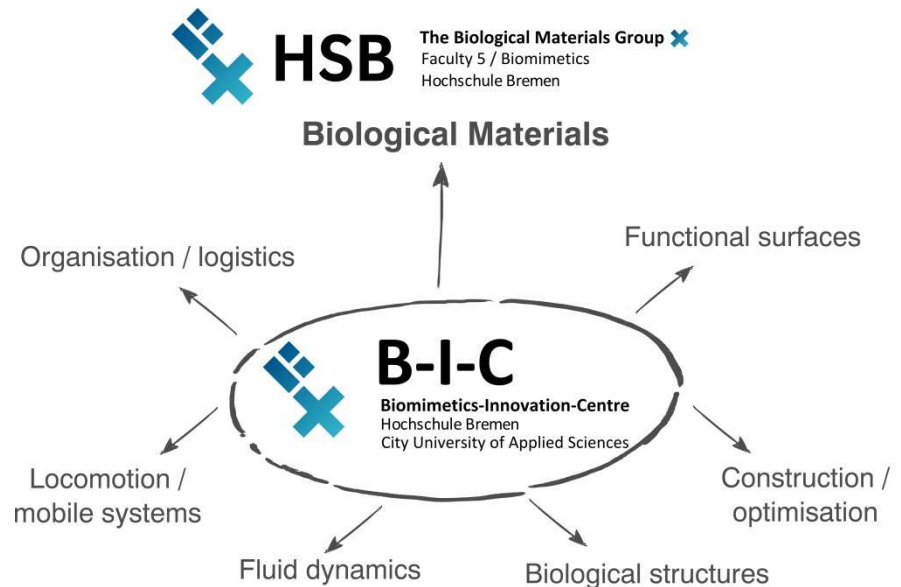


Prof. Dr.-Ing. Jörg Müssig
Phone: +49 421 5905 2747
@: joerg.muessig@hs-bremen.de

www.bionik-bremen.de

Research & Development on Biomimetic & Biological Materials

The Biological Materials Group represents one of the key aspects of the Biomimetics-Innovation-Centre (B-I-C) at HSB. We offer a broad field of competences in research and development. Our activities are included in regional, national and international networks.



Research at the Biomimetics-Innovation-Centre.

Skills and Equipment of The Biological Material Group

We offer:

- Research & studies
- Material & product development
- Material testing
- Research cooperation
- Research assignment

We therefore have a **broad range of equipment** available including:

- Fibre characterisation: bending and tensile testing for fibres, image analysing software for the measurement of fibre morphology.
- Material characterisation for composites, polymers and biological materials: tensile testing, bending, torsion and compression tests, Charpy and Izod impact tests, fibre content analysis by extraction, melt-flow index, etc.
- Investigation of fibre/matrix interactions: pull-out test, microbond test, single fibre fragmentation test, etc.
- Microscopy: light microscopy, scanning electron microscopy, atomic force microscopy.
- Different composite production methods: e.g. mini pultrusion, form pressing, fibre winding.
- Bio-based compound development for injection moulding and 3D-printing.