



Symposium U : Functional bio-related materials: design, synthesis, characterisation, and applications

Scope of the Symposium

Bio-based materials can be used to take advantage from natural resources (e.g. biomass) to develop sustainable products and processes that are environmentally friendly and energetically efficient. In the same context, biomaterials are designed to interact with biological systems for medical and dental purposes in either therapeutic or diagnostic applications. The emerging fields of bio-based and biomaterials have a growing relevance in terms of functionalities both scientifically and economically due to concerns related to climate change, sustainable development and human health. Functional bio-based and biomaterials need to fulfill requirements with regard to mechanical performance, cost-efficiency, and sustainability in order to be introduced into the market. Moreover, when dealing with the interaction of materials with biological systems the issues of bioadhesion, bioactivity, biotoxicity, and biocompatibility are extremely important. To address these challenges, innovative and multidisciplinary approaches involving chemistry, physics, biology, materials science, and engineering are required. This symposium aims to provide a place for discussion and exchange of current and future challenges, as well as the latest breakthroughs in the fields of bio-related materials. Topics covering the design, synthesis, characterisation and applications of bio-based materials and biomaterials are strongly welcome. This symposium is motivated by the strong collaboration between German and Brazilian researchers and institutions from various collaboration initiatives. However, students, scientists and researchers from any country are warmly invited to take part in the symposium. Selected papers will be published in a special issue of the journal Applied Adhesion Science from Springer.

Abstracts will be solicited in (but not limited to) the following areas

- *Computational modelling of bio-based and biomaterials*
- *Surface modification and biointerfaces for biomedical applications*
- *Structure and properties of bio-related materials*
- *Biological response to bio-related materials: tissue engineering and regeneration, biocompatibility and bioactivity*
- *Innovations in bio-related materials manufacturing: 3D-printing, additive manufacturing, self-assembly, and others*
- *Bio-related materials application: medical, dental, and engineering*
- *Long-term behaviour of bio-related materials*
- *Biodegradability, life cycle analysis, and recycling*
- *Characterisation techniques of bio-based and biomaterials*
- *Biocomposites, biohybrid and smart materials*

Tentative list of invited speakers (To be confirmed)

Diego Mantovani (*Universit Laval*) **Katharina Haag** (*Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM*) **Prof. Dr. Dorothea Braggemann** (*University of Bremen*) **Prof. Marcus Vinicius Lia Fook** (*Federal University of Campina Grande (UFCG)/CERTBio*) .

Symposium Organizers

Vinicius Carrillo Beber (*Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM*) **Kelen M. F. Rossi de Aguiar** (*Federal University of Technology - Paran (UTFPR)*) **Flvio Henrique Baggio** (*Faculty of Dentistry from Piracicaba (FOP)*) **Liliane Batirolla** (*Federal University for Latin American Integration (UNILA)*) .

XIX Brazil MRS Meeting