

Special Issue in e-Polymers: **BIODEGRADABLE AND BIO-BASED POLYMERS: GREEN APPROACHES**

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DESCRIPTION

The goal of polymer adsorption is to alter the way surfaces interact, which enhances flocculation procedures, surface characteristics, and particle dispersion. Most frequently, it is determined by how quickly a solution loses concentration after coming into contact with a surface.

The cellular behavior of polymeric biomaterials can be influenced by a wide range of characteristics. Although numerous theoretical and experimental attempts have been made to explain these mechanisms, it is still unclear how they contribute to the biocompatibility of polymers at the molecular level. The biological reaction to contact with polymers has been recognised as being fundamentally dependent on interactions between water and proteins. Based on the findings of the water sorption process into polymeric biomaterials, we put forth the notion of "Intermediate Water." Stronger than free water but weaker than firmly bound non-freezing water, intermediate water interacts with polymer chains in a middle-ground manner.

The first section of the Special issue discusses the current state of knowledge, fresh difficulties, and potential benefits of various biodegradable and biocompatible polymer composite systems. The composites' interfacial characterisation is well covered. In-depth reviews of the processing methods for various systems and how processing parameters affect composite qualities are provided. Microstructure, elastic, viscoelastic, static and dynamic mechanical, thermal, rheological, optical, electrical, and barrier properties are highlighted, along with their numerous applications. Biomedical or biomass-based materials are two common interpretations of biocomposites.

In contrast to the latter, the former have a broader connotation because they can be used for a variety of industrial purposes. A biomass-based composite is made of biomass or a material generated from biomass. A biomedical composite, on the other hand, is a specific material because it can only be used for biomedical purposes. The ingredients should be biocompatible in this utilisation even though they are not necessarily biomass-based or biodegradable. As previously indicated, the term "biocomposites" in this volume refers to composites made from biomass. The usage of biocomposites in this area is based more on structural than functional considerations.

From this perspective, just like with artificial reinforcing materials like carbon and glass fibres, we need to precisely determine the mechanical properties of natural fibres and wood flours, such as tensile strength and Young's modulus. In the subject of textile engineering, the tensile characteristics of natural fibres including cotton, flax, wool, and silk have been thoroughly studied.

KEY TOPICS

- ▶ Biodegradable composites: Synthesis and preparation
- ▶ Biodegradable and biocompatible polymer composites applications in medical and environment
- ▶ Polymer solution adsorption
- ▶ Adsorbents based on naturally occurring polymers that have undergone chemical modification
- ▶ Adsorption of additive chemicals
- ▶ Application of biodegradable and biocompatible polymers in tissue engineering
- ▶ Using starch-based biosorbents to remediate dye effluent in textiles
- ▶ Dicarboxylic acids and their associated sugar and amino acid derivatives are used to create bio-based aliphatic polyesters.

HOW TO SUBMIT

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All submissions to the Special Issue must be made electronically via the [ScholarOne submission system](#).

All manuscripts will undergo the standard peer-review process (single-blind, at least two independent reviewers). When entering your submission via online submission system please choose **"Special Issue: Biodegradable and bio-based polymers"**.

Submission of a manuscript implies that the work described has not been published before and it is not under consideration for publication anywhere else.

The deadline for submissions is **August 31st, 2023**, but individual papers will be reviewed and published online on an ongoing basis.

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We are looking forward to your submission!

In case of any questions please contact the Managing Editor of e-Polymers (Dr. Krzysztof Dębniak, epolymers.editorial@degruyter.com).