Special Issue

Multiscale and Multi-Physical Behavior of Polymers and Polymer Composites

Message from the Guest Editor

- Polymers and polymer composites are integral to advancements in aerospace, automotive, biomedical, and energy applications due to their tunable properties and lightweight nature. However, their performance hinges on complex interactions across multiple scales and under diverse physical stimuli. Understanding these multiscale and multi-physical behaviors remains a critical challenge.
- This Special Issue invites original research and reviews addressing experimental, computational, and theoretical advances in characterizing and modeling polymers and composites across scales. Topics of interest include the following: multiscale structure–property relationships (e.g., crystallinity, filler dispersion, interfacial effects); multi-physical coupling mechanisms (e.g., thermo-mechanical, hygro-thermo-chemical responses); advanced characterization techniques (in situ microscopy, spectroscopy, and tomography); predictive modeling (molecular dynamics, finite element analysis, and machine learning); the environmental degradation, recycling, and sustainability of polymeric systems; and novel processing methods to tailor multiscale architectures (3D printing and self-assembly).

Guest Editor

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Message from the Editor-in-Chief

Since its foundation in 2009, *Polymers* has developed into an internationally renowned, extremely successful open access journal. The editorial team and the editorial board dedicatedly combine open-access publishing and high-quality rigorous peer reviewing. The performance of the journal has proven this strategy to be well-suited and highly successful. This is reflected in the increasing impact factor of *Polymers*, the most recent one being 4.9.

I would like to invite you to contribute to the success of the journal by sending us your high quality research papers. We would be pleased to welcome you as one of our authors.

Editor-in-Chief

Prof. Dr. Alexander Böker
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