Special Issue

Biomass-Based Polymer Composites: Synthesis, Processing, and Performance

Message from the Guest Editor

With advances in polymerization technologies, multiscale manufacturing, and sustainability-driven designs, biomass-derived small molecules and macromolecules are being re-evaluated as high-value feedstocks. Their smart molecular architectures, hierarchical structures, and abundant reactive sites collectively endow them with significant potential to replace conventional petrochemical-based materials. Beyond their natural properties, biomass materials offer highly designable synthesis and processing platforms enabled by molecular engineering, interfacial modulation, and multiscale composite strategies. These approaches facilitate the construction of ordered or disordered hierarchical microstructures, dynamically reversible networks, and synergistic interfacial architectures. The integration of such innovative strategies enables precise tuning and coupling of diverse functions, including mechanical strength, toughness, self-healing, conductivity, adhesion, responsiveness, and recyclability, thus granting biomass-based polymer composites a broad promise in lightweight components, green packaging, soft electronics, energy harvesting, human–machine interfaces, and smart healthcare.

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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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