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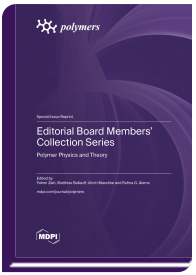
Special Issue Reprint

Editorial Board Members' Collection Series: Polymer Physics and Theory



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This Special Issue showcases the research at the forefront of polymer science, focusing on phase separation in polymer mixtures, which bridges materials science and biology. It highlights significant biomedical advancements, such as how star polymer-based polyplexes could transform drug delivery via elucidating DNA–polymer interactions. The collection also explores the mechanical properties of hybrid epoxy nanocomposites, which are foundational for advancements in material durability. Furthermore, the series extends to fluid dynamics using rod-like particles, expanding industrial process insights. Sustainability is a core theme, with studies concerning natural polymers aimed at pollution control plastic recycling methods via 3D printing to support a circular economy. Also featured are investigations regarding the surface properties of plasma-treated polyethylene films and grain boundaries in epoxy/graphene composites, offering new perspectives on material strength. Moreover, a critical reassessment of viscoelastic interactions in polymer melts offers a fresh viewpoint, and research on the wear resistance of nitrile butadiene rubber seals under hydrothermal conditions emphasizes the importance of reliability in mechanical systems. This collection not only encapsulates the current polymer research landscape, but also prompts further exploration into its multifaceted applications, promoting global sustainability objectives and future innovations.

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