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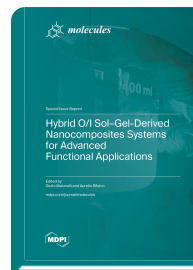
Special Issue Reprint

Hybrid O/I Sol–Gel-Derived Nanocomposites Systems for Advanced Functional Applications

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The demand for high-performance polymer-based systems continues to drive both academia and industry toward the design of innovative and sustainable materials for applications in sectors like electrical engineering, electronics, advanced packaging, and flame retardancy. This Reprint brings together key contributions from experts in polymer research, focusing on hybrid O/I sol–gel-derived nanocomposites for advanced technologies. It highlights recent advancements in the preparation, characterization, and processability of hybrid O/I systems, with a focus on sustainability. The volume explores interactions between polymer matrices and functional components, examines alternative fillers with environmental and economic benefits, and emphasizes the increasing role of machine learning in sol–gel science. These data-driven approaches are enhancing material property prediction, formulation optimization, and the design of new composites. Each chapter provides a solid theoretical foundation, experimental results, and key conclusions, offering readers a deeper understanding of cutting-edge developments and the impact of artificial intelligence in materials science.



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