Special Issue

Fabrication and Applications of Polymer Nanocomposite Materials

Message from the Guest Editors

Polymer nanocomposite materials represent a cutting-edge class of composites that integrate the unique properties of nanoscale fillers within a polymer matrix, leading to a significant enhancement in performance and functionality. The fabrication of polymer nanocomposite materials involves the dispersion of nanoscale particles within a polymer matrix. The key challenge in fabrication is ensuring uniform dispersion and strong interfacial adhesion between the filler and the matrix, which are crucial for achieving the desired improvements in material properties. The topic of "Fabrication and Applications of Polymer Nanocomposite Materials" is thus of great interest due to its potential to revolutionize numerous industries by providing materials with tailored properties and functionalities that meet the demands of modern technology and sustainability. Research in this area focuses on developing new fabrication techniques, understanding the relationship between nanostructure and macroscopic properties, and exploring novel applications that leverage the unique properties of these materials.

Guest Editors

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Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call “nanomaterials”. These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access. We are proud of our increasing impact factor and ability to provide rapid decisions to authors.

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