



Multifunctional Polymer Nanocomposites

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Message from the Guest Editors

With the rapid advancements in nanotechnology, it has now become feasible to produce hierarchically structured polymer composites, encompassing fillers such as carbon nanotubes (CNTs), carbon nanofibers (CNFs), and graphene-based and other inorganic inclusions. These nanocomposites exhibit various physiochemical properties, which may not be attainable by the individual component. The synergy of nanocomposite design with advanced 3D printing techniques has also opened opportunities to produce engineering materials with tailored properties including multi-functionality, i.e., mechanical, thermal, electrical, optical, etc. Various advantages of the "nano-effects" observed include increased conductivity, improved biodegradability, and reduced flammability, which are all factors of the interface between the macromolecule of the polymer and the nano-sized heterogeneities. The current research on nanocomposites is centered on various applications such as nanobiomaterials, nanoelectronics, nanocomposite-based drug-delivery systems and supercapacitors, etc.





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