Special Issue

Supramolecular Nanostructures for Smart and Tailored Drug Delivery: Recent Progress and Future Perspectives

Message from the Guest Editors

The term “supramolecular nanostructures” refers to well-defined nano- to meso-scale objects that have resulted from the assembly of ad hoc designed or naturally occurring building blocks held together by non-covalent, directional and reversible interactions (e.g., hydrogen bonding, ionic bonding, dipole forces, hydrophobic interactions and Van der Waals forces or a combination of these). Small molecules (e.g., cyclodextrins), polymers, peptides and proteins are examples of the building blocks available for the fabrication of supramolecular nanostructures. The non-covalent nature of their constituent interactions provides supramolecular nanostructures with additional advantageous features, such as dynamism and stimuli-responsiveness that can be exploited to drive specific responses (e.g., stimuli-responsive drug delivery) while interfacing with biological systems. Overall, supramolecular nanostructures exhibit a wide compositional and chemical versatility, which enables their fine optimization to meet specific requirements (e.g., tailored payload release, active targeting on specific cells, tissues or organs).

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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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