Special Issue

Virus-Based Nanomaterials and Nanostructures

Message from the Guest Editors

A virus is considered as a nanoscale organic material that can infect and replicate only inside the living cells of other organisms, from animals and plants to microorganisms, including bacteria and archaea. The structure of viruses consists of two or three parts: (i) the genetic material made from either DNA or RNA, that carry genetic information; (ii) a protein coat, called the capsid, which surrounds and protects the genetic material; and in some cases; and (iii) an envelope of lipids that surrounds the protein coat. By inserting the gene encoding functional proteins into the viral genome, the functional proteins can be genetically displayed on the protein coat to form bioengineered viruses. Therefore, viruses can be depicted as biological nanoparticles with genetically tunable surface chemistry and serve as models for developing virus-like nanoparticles and even nanostructures. Via such a process, 'viral display', bioengineered viruses can be mass-produced with lower cost and potentially applied to tissue regeneration, gene/peptide/drug delivery, theranostics, bio-sensing, and even energy harvesting and storage.

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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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