Advances in Physical Chemistry

Hindawi

Special Issue on

Experimental and Computational Investigation on the Application of Nanomaterial in Biological System

CALL FOR PAPERS

Recent decades have witnessed an explosion of research on the interaction between nanomaterials and biological systems. This special issue is dedicated to recent research advances in experimental and computational investigation in physical, chemical, and mechanical behavior of nanomaterials and their relevant applications in the biological system or related field. From experimental viewpoint, those materials offer unique advantages in a wealth of biological applications such as sensors, catalysts, imaging, and drug delivery, due to their excellent high surface-volume ratio, high electrical conductivity, chemical stability, and strong mechanical strength and toughness. Meanwhile, computational modeling and simulation, such as density function theory, molecular dynamics, and mesoscale simulation as well as finite element simulation, has been emerging as an indispensable tool to provide a guideline or complement framework for superior nanomaterial fabrication and further application in the experiments.

The complex, intriguing, and hierarchical interaction between nanomaterials and biological system, originating from multiple spatial and temporal scales, calls for advanced multiscale computational techniques to account for all-important mechanisms underlying in the experiments.

Potential topics include but are not limited to the following:

- Characterization of nanocomposites include carbon nanotubes, boron nitride, graphene, bone lamellae, nacre, and their derivatives
- Nanocomposites fabrication and characterization
- Application of nanomaterial in drug delivery and imaging
- Organic-inorganic interactions in biological environment
- Multiscale modeling and simulation on the interface of nanomaterial with biological components

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