Special Issue

Advancements in Imaging and Sensing of Single Multi-Functional Nanoparticles, Viruses and Organelles

Message from the Guest Editors

The state of the art in optical imaging and nanosensing for single nanoparticles and cellular organelles has made significant strides in recent years, with advancements in techniques like super-resolution microscopy, fluorescence imaging, and nanoparticle-based sensors, including a variety of plasmonic methods and nanopore approaches. However, the limited ability to monitor complex, dynamic interactions inside nanoparticles and cellular organelles over extended periods also remains a bottleneck, as current methods often struggle with photobleaching or phototoxicity. Therefore, methods to improve fluorescence-mediated sensing or perform label-free measurements with techniques like SPR, SERS, and electrical nanopore sensing are still needed. Addressing these challenges will be crucial to fully realize the potential of optical imaging and nanosensing in both basic and applied biological research focused on the analysis of molecular interactions between and within diverse types of nanoparticles and cellular organelles.

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Editor-in-Chief

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