

Special Issue

Multicore Magnetic Nanoparticles for Biomedical Applications

Message from the Guest Editor

Magnetic nanoparticles, including metallic (iron, cobalt), alloy (iron–platinum, iron–cobalt) or iron oxide (magnetite, maghemite or ferrite phase) exhibit a singular property called superparamagnetism. The nanoscale size of these nanoparticles makes their superparamagnetic properties both size- and shape-dependent. In addition to these two parameters, the presence of magnetic interactions between nanoparticles induce a new magnetic state. This is especially true for multicore magnetic nanoassemblies. Multicore nanoassemblies include magnetic nanoparticles embedded or decorating organic, polymer or biological matrices. In these structures, the number of interacting nanoparticles and the distances between them can lead to two new magnetic orders: superspin glass and super(ferro/ferri)-magnetic state. This Special Issue aims to highlight how interparticle interactions affect the properties of multicore nanoassemblies labeled for biomedical application. The topic covers a wide range of biomedical applications, including but not limited to magnetic fluid hyperthermia, magnetic resonance imaging, on-demand drug delivery or magnetic particle imaging.

Guest Editor

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Message from the Editor-in-Chief

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.

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