

Special Issue on
Heterostructured Magnetic Nanoparticles

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One of the challenging tasks in the field of nanomagnetism is to control the magnetism at nanoscale regime ideally ten or less nanometers. The answer has important implications not only for the magnetic storage industries and biomedicine, but also from viewpoint of their fundamental understanding. Conventional magnetic nanoparticles have numerous interesting physical properties and potential applications. Their behavior is particularly fascinating when they are in close contact with or enclosed by a thin layer of other dissimilar materials. This gives rise to interfacial exchange-coupling, indeed affecting their overall magnetic response. They might provide an avenue for beating the SPM limit, design of dual MRI/optical agents, and many among others. In this regard, magnetic nanoheterostructures with, for example, core-shell, dumbbell, or dimer architecture, have raised considerable interest in basic research as well as potential industrial applications due to their broad range of novel and enhanced properties.

This special issue is aimed at highlighting the magnetic behavior of nanoheterostructures (e.g., core-shell, heterodimer, and dumbbell geometries) and their prospective applications. Furthermore, we want to stress the advances in liquid phase chemical synthesis routes as well as the important role of advanced characterization tools in understanding the magnetic properties of these structures.

Potential topics include but are not limited to the following:

- ▶ Nanogranular magnetic systems
- ▶ Superparamagnetism and related properties
- ▶ Magnetic nanohybrids, related properties, and applications
- ▶ Dipolar interactions in magnetic nanosystems
- ▶ Bimagnetic nanosystems
- ▶ Exchange coupled magnets
- ▶ Spin polarization and charge transfer mechanism
- ▶ Magnetic nanohybrid catalyst
- ▶ Bifunctional nanosystems
- ▶ Rare Earth doped magnetic oxide
- ▶ Biomedical applications
- ▶ Magnetoelectric materials
- ▶ Advanced materials characterization techniques

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