Special Issue

Magnetic Nanoparticles: Synthesis, Assembly and Applications

Message from the Guest Editors

Monodisperse magnetic nanoparticles are of interest for both technological and fundamental reasons. One reason for this trend is that they are potential candidates for increasing devices' magnetic storage density even further towards the terabyte-per-inch-squared level; the magnetic interaction between neighboring particles is becoming an increasingly important parameter that must be understood and controlled.

Regular arrangements of magnetic nanoparticles across a large surface area are of fundamental interest for understanding magnetic interactions and for designing potential applications in information technology and spintronics devices that utilize the spin degree of freedom in electron currents, in addition to charge. Once nanoparticle building blocks self-assemble on a substrate, they produce a new system that presents an ideal model to study the interaction between particles on the length scale, which is defined by the nanostructure.

- magnetic nanoparticles
- nanomagnetism
- nanomaterial
- self-assembly
- X-ray scattering
- neutron scattering
- small-angle scattering
- grazing incidence small-angle scattering

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