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Magnetic Nanoparticles and Nanostructures as seen by Neutron Scattering

Magnetic nanoparticles and nanostructures reveal interesting magnetic properties and relaxation phenomena which make them relevant for sensor technology, imaging techniques, or magnetic heating, applicable to magnetic hyperthermia and thermocatalysis applications. Whereas the implementation of nanomagnetic properties into technological applications is progressing rapidly, fundamental questions remain challenging, such as the evolution of nanoscale magnetization and magnetization relaxation or the response of magnetic nanoparticles to dynamic magnetic fields.

Neutron scattering techniques are highly valuable to address such questions by cross-scale investigation of structure, magnetization, and dynamics in nanoscale materials.
In this talk I will present our recent work on the nanoscale distribution of magnetic order and disorder within nanoparticles and the dynamic reorientation and self-organization of nanoparticles in dynamic magnetic fields.

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