



Magnetic Nanoparticles: State of the Art and Future Perspectives

Guest Editor:

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Message from the Guest Editor

Nanotechnology has grown rapidly over the past twenty years, and nanoparticles generally form the basis of this new technology and find multiple applications in several fields, such as health, electronics, environment, transport, consumer products, and care. Magnetic nanoparticles, in particular, are increasingly used to improve therapeutic protocols or diagnostic methods, but also for several other applications, such as catalysis, data storage, and energy.

The multiple applications of magnetic nanoparticles depend on their magnetic behavior (soft, semi-hard, or hard). For example, magnetically hard materials can be used as permanent magnets, semi-hard materials can be used for magnetic recording, and soft materials can be used for electronic components (inductors or transformers). Furthermore, they can be used as a contrast agent, as a tracer, as an agent for the treatment of cancer by magnetic hyperthermia, or as an antibacterial agent.

There are a multitude of magnetic nanoparticle synthesis methods that can produce nanoparticles with a given magnetic behavior.

