

## Application of Nanoparticles in Biomedical and MRI

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**Abstract :** At present, nanoparticles are used for various biomedical applications where they facilitate laboratory diagnostics and therapeutics. The performance of nanoparticles for biomedical applications is often assessed by their narrow size distribution, suitable magnetic saturation, and low toxicity effects. Superparamagnetic iron oxide nanoparticles have received great attention due to their applications as contrast agents for magnetic resonance imaging (MRI). (Processes in the tissue where the blood brain barrier is intact in this way shielded from the contact to this conventional contrast agent and will only reveal changes in the tissue if it involves an alteration in the vasculature. This technique is very useful for detecting tumors and can even be used for detecting metabolic functional alterations in the brain, such as epileptic activity. SPIONs have found application in Magnetic Resonance Imaging (MRI) and magnetic hyperthermia. Unlike bulk iron, SPIONs do not have remnant magnetization in the absence of the external magnetic field; therefore, a precise remote control over their action is possible.

**Keywords :** nanoparticles, MRI, biomedical, iron oxide, spions

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