



## Nanoparticles in Analytical and Medical Devices

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## 7 - Nanoparticles: an emerging platform for medical imaging

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## Abstract

Nowadays early detection and diagnosis of diseases is in urgent demand which regularly impels the development and expansion of imaging modalities and contrast agents for medical use. Presently nanoparticles come up as an important operator in producing new biomedical imaging and therapeutic utility. There are many complications still present for detailed information regarding structure and lesions depiction; the complications can be overcome through evolution of the contrast agents with longer circulation time and nontoxicity. This could be possible with the development of nanoparticles-based imaging techniques. This article focuses on contrast agents involving nanomaterial utilized in biomedical imaging probes such as MRI, CT, US, PET and SPECT, fluorescence imaging. The application of contrast agents via utilizing nanotechniques gives an improved efficiency in biomedical areas. Additionally, the applications in each imaging modality are also discussed with some examples. Nanoparticles as imaging contrast agents have promise to be greatly beneficial in providing a perceptual vision of this important field of nanomedicine in clinical practice.

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## Keywords

Imaging; contrast agents; nanoparticles; MRI; nanomedicine

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