

## Functionalized Nanoparticles for Drug Delivery Applications

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**Abstract :** Functionalized nanoparticles have emerged as a revolutionary platform for drug delivery, offering significant advantages over traditional methods. By strategically modifying their surface properties, these nanoparticles can be designed to target specific tissues and cells, significantly reducing off-target effects and enhancing therapeutic efficacy. This targeted approach allows for lower drug doses, minimizing systemic exposure and potential side effects. Additionally, functionalization enables controlled release of the encapsulated drug, improving drug stability and reducing the frequency of administration, leading to improved patient compliance. This work explores the immense potential of functionalized nanoparticles in revolutionizing drug delivery, addressing limitations associated with conventional therapies and paving the way for personalized medicine with precise and targeted treatment strategies.

**Keywords :** nanoparticles, drug, nanomaterials, applications

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