

## **ABSTRACT**

This review is focused on the current synthetic routes for the preparation of magnetic nanoparticles and nanocomposites as well as their surface modifications with functional groups useful for biomedical applications. Some of the possible applications of nanocomposites in nanomedicine, targeted drug delivery, hyperthermic destruction of cancer cells at targeted sites, immuno-sensing and imaging for isolation and tracing of medicinal compounds, immobilization of proteins and enzymes, separation of biomolecules including proteins, enzymes and DNA are briefly discussed. Future design and possible usages of magnetic nanomaterials are also predicted.