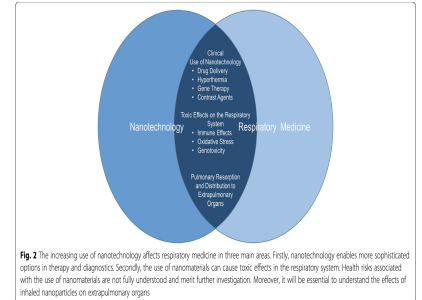


# Nanotechnology in medicine

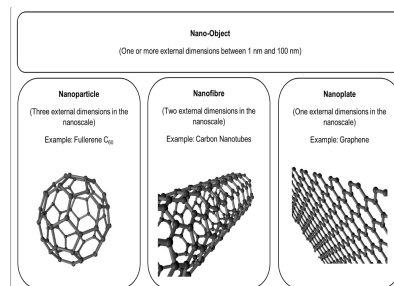
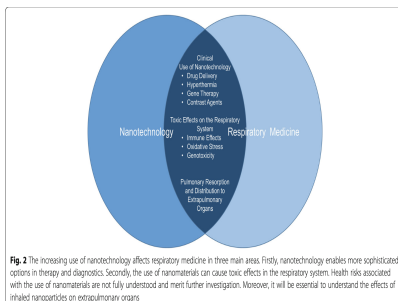
## Overview

Nanomedicine is a relatively new field of science and technology. It looks sometimes ill defined and interpretations of that term may vary, especially between Europe and the United States. By interacting with biological molecules, therefore at nanoscale, nanotechnology opens up a vast field of research and application. Interactions between artificial molecular assemblies or nanodevices and biomolecules can be understood both in the extracellular medium and inside the human cells. Operating at nanoscale allow to exploit physical properties different from those observed at microscale such as the volume/surface ratio.



## Technical Details

The investigated diagnostic applications can be considered for in vitro as well as for in vivo diagnosis. In vitro, the synthesized particles and manipulation or detection devices allow for the recognition, capture, and concentration of biomolecules. In vivo, the synthetic molecular assemblies are mainly designed as a contrast agent for imaging. A second area exhibiting a strong development is the "nanodrugs" where nanoparticles are designed for targeted drug delivery. The use of such carriers improves the drug biodistribution, targeting active molecules to diseased tissues while protecting healthy tissue.



**Fig. 1** Nano-Objects can be divided into nanoparticles, nanofibres and nanoplates depending on the number of external dimensions in the nanoscale