

Nanomaterials have caught the interest of biomedical science because of their size (which enables them to interact with cellular structures), high surface area, and unique physical properties. Gold nanoparticles (GNPs) can be synthesised in various shapes. Their common property is surface plasmon resonance, which makes it possible to detect these particles with high resolution using dark field microscopy. GNPs can be efficiently modified with various ligands such as drugs, antibodies, or aptamers; this can be utilized to selectively bind GNPs to tissues, e.g. for drug delivery. Conjugated GNPs can also be used in diagnostics of tumor cells as well. Photothermal therapy consists of GNPs selectively binding to the tumor tissue, where they transform light into heat upon irradiation by near-infrared (NIR) light, thereby damaging nearby cells. The toxicity of GNPs is currently unclear. Research into modified gold nanoparticles is of great interest for targeted tumor therapy, as it may yield a tool for the selective destruction of tumor cells.