

Release of encapsulated dye from monolayer of gold nanoparticles by using UV light and Glutathione

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We prepared a drug carrier which can be simultaneously controlled release of drug using both internal and external stimuli. Gold nanoparticles (AuNPs) were functionalized by di-nitrobenzyl photo-cleavable group that was dissociated upon light irradiation. Monolayers of AuNPs composed of hydrophobic interior and hydrophilic exterior. A hydrophobic drug was intercalated into an interior of AuNPs by non-covalent strategy which avoided chemical bonding between drug and carrier. So, the release of drug can be controlled by UV light irradiation. In addition, release efficiency was increased by Glutathione. Photo-cleavable ligands of AuNPs were replaced by Glutathione while the drug was released. AuNPs were characterized by UV-VIS absorption spectroscopy and Transmission electron microscopy (TEM) and Dynamic light scattering (DLS). Release study was characterized by fluorescence spectroscopy. It was found that the release of hydrophobic drug was pronounced in the presence of UV light and glutathione.
