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## Gold Nanoparticle Stabilized in Biocompatible Aqueous Media

The invention provides a method of synthesizing nanoparticles using environmentally benign reducing agents, non-toxic materials for stabilization, and solvent mediums for the syntheses for pharmaceutical and biological applications. The three main steps in the preparation of metal nanoparticles include using an environmentally benign reducing agent, non-toxic stabilization materials and solvent medium for the syntheses. In contrast to the current methods the syntheses method of the present invention of NIR-absorbing gold nanoparticles is a facile single-step method and involves significantly fewer chemicals compared to methods in the literature. Chemicals in literature methods including CTAB (stabilizer), NaBH<sub>4</sub> (reducing agent), AgNO<sub>3</sub> and CDAB (growth enhancers) are very toxic to both human cells and the environment. Environmental concerns and cell toxicity are of major concern in the chemicals used in the literature synthesis methods, which are not used in this invention. Minimizing the use of chemicals and effective replacement of these chemical ligands with biologically adaptable biomolecules will enhance all biological applications of gold nanoparticles. The present invention allows the syntheses of gold nanoparticles with about 700-1000 nm plasmon absorptions in a single-step from a single starting precursor.

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