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GOLD AND IRON-GOLD NANOPARTICLES FOR INTRACELLULAR TRACKING AND IN VIVO MEDICAL APPLICATONS

WEI FU, GURINDER SAINI, DINESH SHENOY, DATTATRI NAGESHA, MANSOOR AMIJI, SRINIVAS SRIDHAR, Physics Department and Pharmaceutical sciences, Northeastern University, Boston, Ma — We have fabricated Au and Fe-Au nanoparticles for potential use in ex vivo experiments such as intracellular tracking, as well as a variety of in vivo medical applications. In order to improve their targeting potential, circulation time and flexibility, gold NPs were surface modified using a hetero-bifunctional poly(ethylene glycol) (PEG, MW 1,500) spacers. A coumarin-PEG-gold NP complex was formed and cell viability studies and optical fluorescence experiments were carried out demonstrating the use of these surface-modified gold NPs for drug delivery, gene therapy and cell trafficking experiments. Fe-Au nanoparticles were also fabricated and show significant contrast enhancement in MRI studies through a substantial reduction of the T2 relaxation time.

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