عنوان مقاله:

A systematic Preparation and investigation of optical properties of silica@gold core-shell nanocomposites for using in photothermal therapy

محل انتشار:

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خلاصه مقاله:

Metal nanoshells consists of a dielectric core surrounded by a thin noble metal shell, possess unique optical properties, including a strong optical absorbance that can be selectively tuned to any wavelength acrossthe visible and infrared regions of the spectrum simply by adjusting the ratio of the dielectric core to the thickness of the metal overlayer[1].Thesefeatures render nanoshells attractive for use in technologies ranging from conducting polymer devices to biosensing, drug delivery and photothermal therapy by absorbing light in NIR range in which human body has the most transparency[2,3]. This paper reports a systematic investigation of the characterization and growth of small gold nanoparticles on the functionalized surface of larger silica nanoparticles. monodispersed silicaparticles and gold nanoparticles were prepared by sol–gel method. The size of the particle could be altered by repeating the stage of reducing HAuCl4 on Au/APTES/silica particles, and the time for which they react. Thenanocoreshell particles prepared were studied using scanning electron microscopy(TEM), UV–vis spectroscopy, Fourier transform infrared spectroscopy(FTIR) and PL spectrophotometer(figures. 1-4). It shows thatBy growing gold nanoseeds over the silica cores a red shift in the maximum absorbance of UV-Visible spectroscopy is observed. furthermore, a remarkable intensification happens in the PL spectra of silica@Au NPscompered with that of bare silica nanoparticles but,the existance of gold nanoseeds on the silica particles surface does not change the peaks of these nanoparticles.

کلمات کلیدی:

core-shell;silica;gold;nanoparticles; functionalized