



ChemTech

International Journal of ChemTech Research

CODEN(USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.3, pp 448-455,2017

The effect of silica concentrations on the absorbance of gold nanoparticles

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Abstract: The study showed the effect of different concentrations of silica by varying the volume of silica source (sodium silicate stock solution) on the absorbance of surface plasmonic resonance (SPR) of coated gold nanoparticles (AuNPs) using UV-visible spectrophotometer. The absorbance of AuNPs without coating at wavelength 521nm and 522nm with coating. The absorbance is increased by increasing the concentration of Silica and reached to optimum value at volume 0.5ml of sodium silicate stock solution and then decreased although the concentration of Silica increased. Gold nanoparticles is synthesized chemically from the solutions of Chloroauric acid (HAuCl_4) and Trisodium citrate dihydrate ($\text{Na}_3\text{C}_6\text{H}_5\text{O}_7$) as a reducing agent using Turkevich method, then it coated with sodium silicate stock solution(Na_2SiO_3).

Keywords: Silica, AuNPs, absorbance, Turkevich method, surface plasmonic resonance, reducing agent, Chloroauric acid.

ZakariyaYahia *et al*/International Journal of ChemTech Research, 2017,10(3): 448-455.
