The gold nanoprisms have received much attention because of their excellent optical and electronic properties which are dependent on their size. In this paper, we report the synthesis of Au nanoprisms in aqueous solution of the surfactant CETAB using Au nanoparticles with an average size of 4.5 nm as seed and different concentration of KI as agent to control the size. For the growth of nanoprisms we use: HAuCl$_4$·3H$_2$O (5 mL, 0.0025 M), CETAB (5 mL, 0.05 M), KI (6 uL of different concentrations 100 mM, 10 mM, 5 mM, 2.5 mM), ascorbic acid (55 uL, 0.1 M), NaOH (55 uL, 0.1 M) and finally 25 mL of the seed solution. The formation and stabilization of Au nanoprisms were confirmed by UV-Vis spectroscopy and Transmission Electron Microscopy. UV-Vis spectra of colloidal solutions revealed the presence of two absorption bands due to surface plasmon resonance of Au nanoprisms, when the KI was used at a concentration of 100 mM the absorption bands were located at 534 and 920 nm. It was observed that to low concentration of KI the absorption band in 920 nm undergoes a blue shift indicating an increase in the size of the nanoprisms. The prisms were obtained with lengths between 40 and 80 nm and they were stable for several months.

**Keywords:** Nanoprisms, Seed, Surfactants

**Presenting author’s email:** yazmhrlic@gmail.com