



Contribution ID: 138

Type: Poster

## Optical Extinction Spectra of Pure Noble Metal Nanorod and Silica Shell Coated Gold Nanorod Embedded in Organic Medium

Metal nanoparticles, especially Au and Ag nanoparticles, have well known that exhibit the localized surface plasmon resonances (LSPR). This article presents the optical property named extinction spectra of pure noble metal (gold and silver) nanorods and silica shell coated gold nanorod embedded in organic medium with fixed dielectric constant were simulated using the quasi-static approximation method. The influences of the respect ratio and shell thickness of silica-coated gold nanorod on the optical extinction spectrum were investigated. The calculated extinction spectra shown that there are two localized surface plasmons resonances (LSPR) peaks corresponding with the transverse and longitudinal modes. The position resonances peaks are slightly shifted when aspect ratio is altered. Pure gold and silver nanorods, the position resonances peak of longitudinal mode is slightly shifted to the longer wavelength, while transverse mode it is shifted to the shorter wavelength. The equations relation between the position resonances peak and aspect ratio is also presented. In addition for silica shell coated gold nanorod, the difference of shell thicknesses plays an important role in determining the position of resonance peak. As the shell thickness was increased the position resonance peak, both transverse and longitudinal modes, slightly shift to the shorter wavelength.

**Primary author:** Dr DASRI, Thananchai (Faculty of Applied Science and Engineering, Nong Khai Campus, Khon Kaen University, NongKhai, 43000, Thailand)

**Presenter:** Dr DASRI, Thananchai (Faculty of Applied Science and Engineering, Nong Khai Campus, Khon Kaen University, NongKhai, 43000, Thailand)

**Track Classification:** Theory and simulation related to nanosystem