

Fabrication of Au and Ag nano-patterns of various shapes by nano-imprint lithography and their characterization by UV-visible-IR extinction spectroscopy

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The signature optical property of noble nanoparticle or nano-sized pattern is the localized surface plasmon resonance (LSPR). When metal nanoparticles are excited by electromagnetic radiation, they exhibit collective oscillations of their conduction electrons known as localized surface plasmon. The wave length corresponding to the extinction maximum λ_{max} , of the LSPR is highly dependent on the size, shape, and dielectric properties of the metal nanoparticles.

The work presented utilize noble metal (Au and Ag) patterned of various shape fabricated using nano-imprint lithography(NIL). NIL readily lends itself to precision control of features and arbitrary array geometry, which can be provided a variety of studying electromagnetic coupling. The LSPR for noble metal patterns in few hundred meter nanometer size regime occurs in the visible and IR regions of the spectrum and can be measured by UV-Vis-IR extinction spectroscopy.