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**Effect of Ti adhesive layer on individual gold nanodisk surface plasmon resonance** DESALEGN TADESSE DEBU, PIJUSH GHOSH, DAVID FRENCH, STEPHEN BAUMAN, JOSEPH B. HERZOG, Univ of Arkansas-Fayetteville — We investigate localized surface plasmon resonance (SPR) of gold nanodisks of various diameter and height fabricated on extremely thin Ti adhesive layers. Dark field scattering measurements reveal significant dependence of SPR in the size nano structures and polarization of the light. Comparisons of peak resonance extracted from spectra using Gaussian fitting of different Ti adhesive layer thickness indicates significant red shifting and damping of the plasmon mode. Experimental results are supported by numerical simulation based on three dimensional finite element time domain analysis. From the simulation and experimental results we quantitatively developed optimized model equation of resonance mode of the nanodisks with respect to adhesive layer thickness and broadening effect of the line shape. Such optimized model is very helpful in guiding targeted nanofabrication such as gold nanodisk antennas or biosensors.

Desalegn Tadesse Debu  
Univ of Arkansas-Fayetteville

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