

Surface plasmon excitation in standing metal-nano-stripe array structure

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We fabricated a standing metal-nano-stripe array structure on a thin ITO layer by the E-beam lithography and Ar^+ sputter redeposition method. Fig. 1 (a) shows gold standing nano-stripe structure which is very narrow and relatively high.

To investigate surface plasmon (SP) excitation on nano-stripe arrays, transmission rate was measured at the normal incidence perpendicular to the stripe axis. Fig. 1 (b) shows transmission rates for standing structure and general stripe structure. SP resonance is found near 600nm in the form of a minimum. Due to the ITO guided mode, waveguide anomaly occurs near 550nm. As a metal width decreases, the SP resonance becomes weak and finally almost disappears at the standing structure because of a very narrow width.

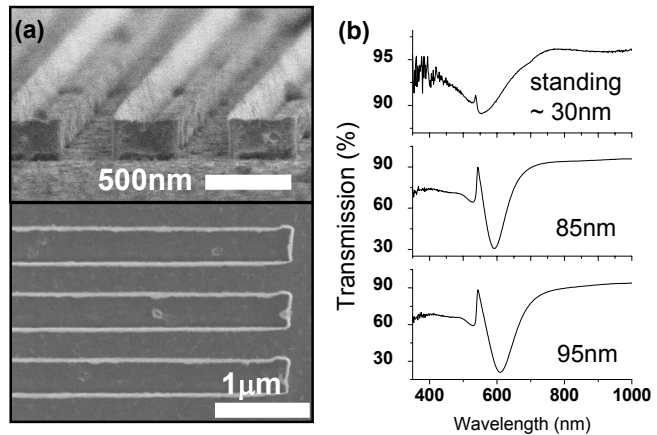


Fig 1. Au Standing nano-stripe array structure
(a) SEM images (b) Transmission spectra of 350nm period metal stripe structure