

SUPPORTING INFORMATION

Aluminum Plasmonic Metasurface Enabling a Wavelength-Insensitive Phase Gradient for Linearly Polarized Visible Light

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1. Distribution of reflection phase for the cases of Au and Ag.

Figures S1(a) and S1(b) show the contour of the reflection phase as a function of the wavelength and the position along the x-direction of the unit cell in the cases of Au and Ag, respectively. The phase contours are irregularly arranged or distorted, unlike the proposed case of Al.

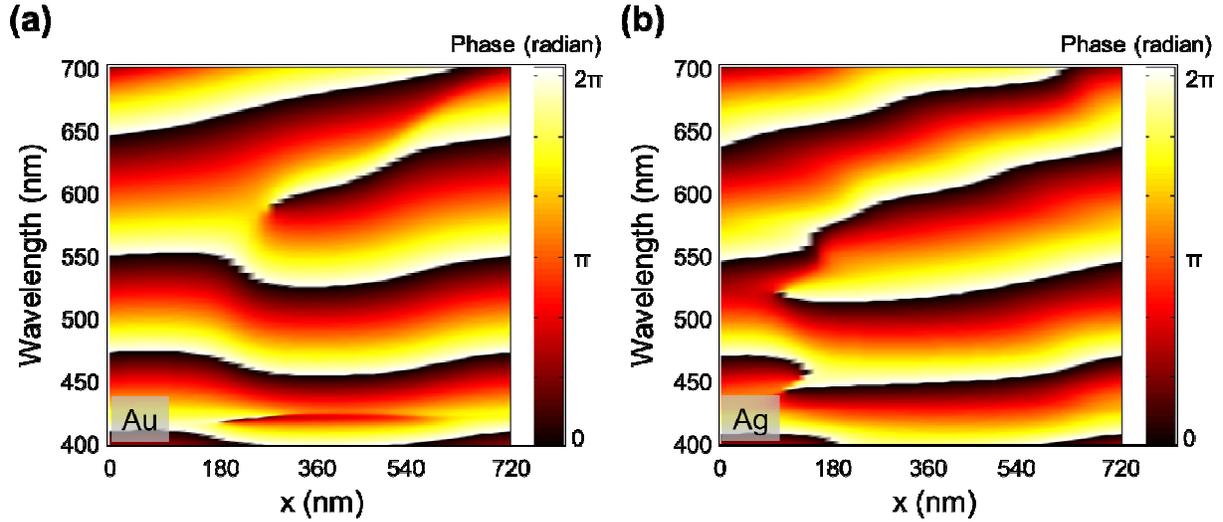


Figure S1. Contour map of the calculated reflection-phase distribution with respect to the wavelength and the position along the longitudinal direction of the unit cell when the metal adopted for the proposed unit cell is supplanted with (a) Au and (b) Ag.

2. Field distribution along the x-direction of the unit cell.

Figure S2 shows the field distribution along the x-direction of the unit cell for the selected wavelengths of 450 nm, 550 nm, and 650 nm.

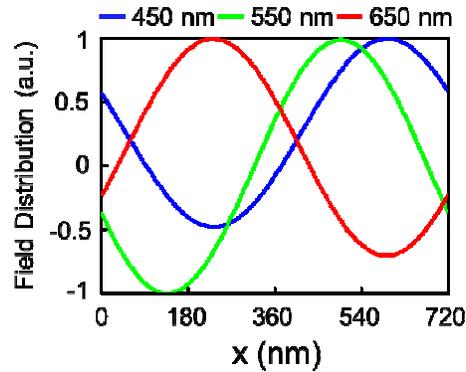


Figure S2. Field distribution along the x-direction of the unit cell.

- Dependence of the resonant scattering on the width of the metallic nanoantenna constituting the MIM structure.

Figure S3 shows the relationship between the scattering cross section (σ_{scs}), which is defined as the ratio of the scattered power to the source intensity, and the width of the Al nanoantenna for the proposed MIM structure. The σ_{scs} discussed in Figure S3 is normalized to the width of the nanoantenna. It has been verified that the resonant wavelength progressively red-shifts in a linear fashion with the increasing of the metal width.

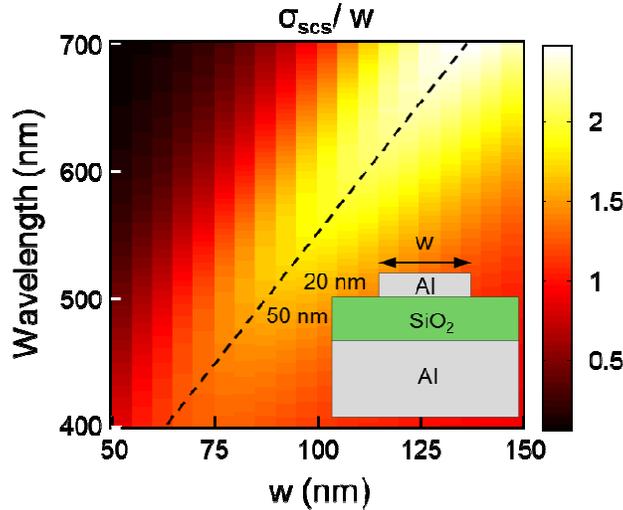


Figure S3. Normalized σ_{scs} in terms of the width of the Al nanoantenna.

- GSP resonance for a unit cell made of Au and Ag

Figures S4(a) and S4(b) show the contour of the $|E_z|$ distribution according to the wavelength and the position along the x-direction at the intersection of the XY plane ($z = 155$ nm) and the XZ plane ($y = 150$ nm) within the unit cell in the cases of Au- and Ag-based metasurfaces, respectively. A linear relationship is not evident between the resonance position and the wavelength.

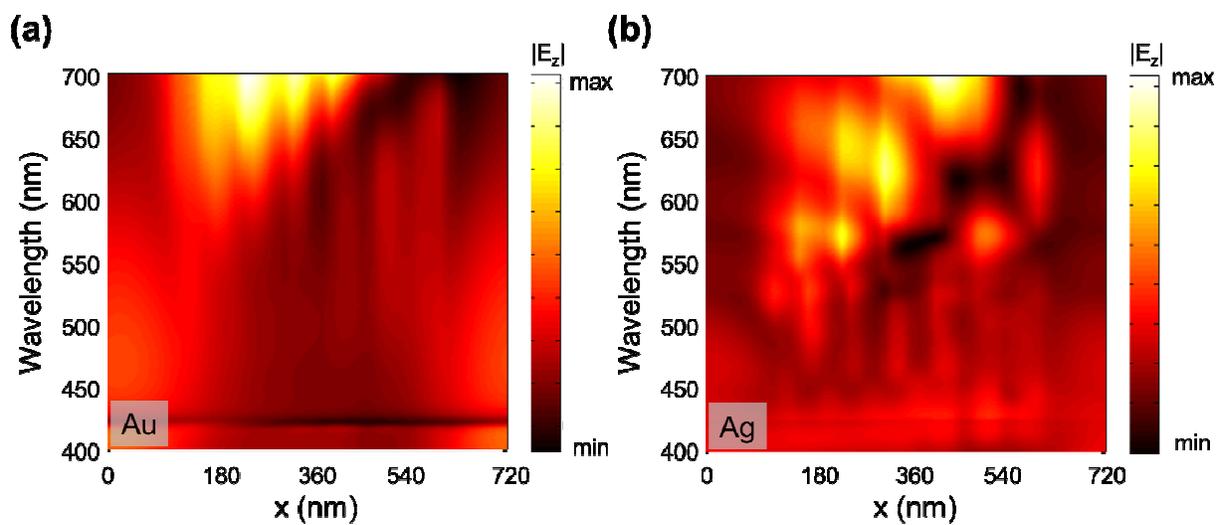


Figure S4. GSP resonance along the longitudinal direction of the unit cell at the intersection of the XY and XZ planes in the cases of (a) Au and (b) Ag.