

Optical response of PMMA+Au₂ nanostructured metasurface composite over Silicon substrate

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Abstract

A nano-structured metasurface composite over a silicon substrate has been fabricated and experimentally tested as plasmonic device. The subwavelength building block was made in a 150nm SiO₂ layer on a silicon substrate coated with different thickness of PMMA. Through nanoimprint hot embossing, a 700nm square lattice of 500nm square patterns structure was imprinted in the PMMA coated Si+SiO₂ substrate. After the process, a layer of gold was sputtered over the embossed PMMA to achieve a metallic-dielectric surface. Optical reflection experiments were done, showing that the peak wavelength of the plasmonic device can be tuned by adjusting the thickness of the coated PMMA. [1][2][3][4]

References

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Figures

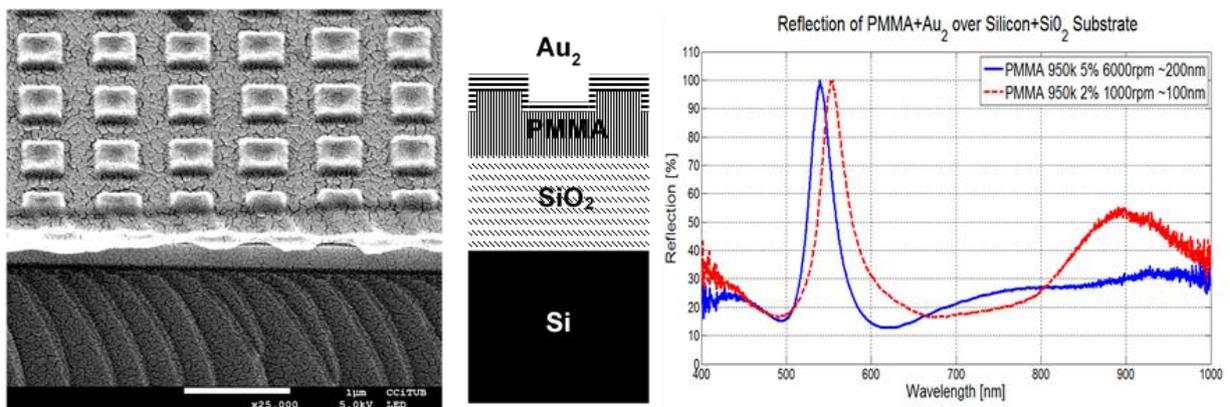


Figure 1. Structured metamaterial composite and its optical reflection response in the visible spectrum. SEM micrograph picture at 45° of the metamaterial (left), layer by layer building block (center) and Reflection of visible light of two different composites(right).