

Fig. 1 Light scattering spectra of a single isolated silver split-ring resonator

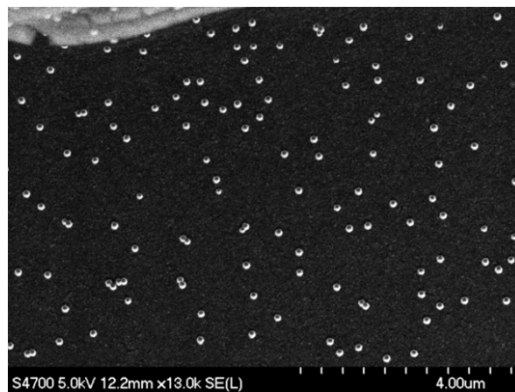


Fig. 2 Gold split-ring resonators distributed on substrate

Content:

Metamaterials are artificial media structured on a size smaller than the wavelength of incident light. A split-ring resonator (SRR) causes magnetic resonance near the LC resonance frequency and changes the permeability of its metamaterial. The size of the SRR must be reduced to around 100 nm for operation in the visible/nearinfrared region; however, it is technically difficult to make an SRR this small with high accuracy. Electron beam lithography was used to fabricate SRRs that operated in this region. However, this method is unsuitable for mass production because the process is complex and the system is expensive.

Recently, we succeeded in making the silver SRR of the diameter of approximately 100 nm by the nanosphere lithography method. In addition, we succeeded in the observation of the LC resonance of single SRR excited by the magnetic field of light.

Keywords: split-ring resonator, metamaterial

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