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标题: The effect of substrate on terahertz transmission properties through metal subwavelength dual-ring structure
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摘要: Terahertz waves through a split-ring resonator (SRR) can induce the resonant absorption, and this can be explained by using the theory of LC resonant circuit and the model of half wave resonance. However, in the dual-ring structure without the split gap, we still observe the resonant absorption in the THz frequency range. By analyzing the phenomenon, we think that it can be explained by using a the model of half wave resonance. Furthermore, it is found that if the structure is fabricated on quartz crystal substrate, we can obtain the angle-dependent terahertz waveforms using terahertz time-domain spectroscopy (TDS) when the sample is rotated in plane, as well as the frequency domain spectra. But this phenomenon does not exist in the silicon-based structure, which may be attributed to the birefringence effect of the quartz crystal substrate on the subwavelength metal dual-ring structure. The main purpose of this article is to explain the physical process of the effect.
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