546.
标题: Analysis of Sharp Dip Structures on Terahertz Transmission Spectra of Metallic Meshes
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摘要: Metallic meshes are designed for anomalous transmission phenomena in the THz region, which originates from the two contributions: one involves the surface waves excitations generated through periodically arranged metal holes, the other involves the half-wavelength resonance of the metal hole. Furthermore, metallic meshes are used to observe the sharp dip in the transmission spectrum. The sharp dip structure is very sensitive to change in the refractive index of materials attached on metallic meshes. However, the origin of the dip structure is still unclear. In this work, we investigate optical response of the dip structure in the THz region from experimental and theoretical viewpoints. It is found that the dip structure is related to cutoff frequency in the electric field distribution based on a transverse electric 11 (TE11) mode of the rectangular waveguide. Finally, we suggest a theoretical equation in order to explain the dip structure. (C) 2012 The Japan Society of Applied Physics
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