583.
标题: Design and Characterization of Tunable Terahertz Metamaterials With Broad Bandwidth and Low Loss
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摘要: Achievable tunable left-handed metamaterials are physically designed and numerically characterized at terahertz (THz) frequency in this letter. The Lu2.1Bi0.9Fe5O12 (LuBiIG) garnet films prepared by liquid phase epitaxy (LPE) method on a gadolinium gallium garnet (GGG) substrate are used to achieve negative permeability, while the silver films are used to achieve negative permittivity. Both the LuBiIG garnet films and silver films are made physically available using the present techniques. The transmission and tunability characteristics of such metamaterials at THz frequency are numerically investigated, and the effective refractive index is retrieved in terms of the simulated transmission parameters. The numerical results obtained demonstrate that such metamaterials have a negative passband centered at 0.1415 THz. The passband can also be shifted by changing the applied dc magnetic field. These results depict a new way of designing low-loss THz transmission media and the resulted waveguides.
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