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Accession number:20113914374910
Title:Terahertz wave polarization rotation in bianisotropic metamaterials
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Source title:Chinese Physics B
Abbreviated source title:Chin. Phys.
Volume:20
Issue:9
Issue date:September 2011
Publication year:2011
Article number:094102
Language:English
ISSN:16741056
Document type:Journal article (JA)
Publisher:Institute of Physics Publishing, Temple Circus, Temple Way, Bristol, BS1 6BE, United Kingdom
Abstract: Utilizing a polarization sensitive terahertz detection method where the detector is rotated by either 0° or 90° to measure the electric field Ep,s(t) of each polarization component, we have characterized the properties of split ring resonators. The strong polarization dependence of the bianisotropic-circular-current-driven and linear-polarization-induced resonances is in excellent agreement with the simulation when the p-polarized terahertz transmission is measured. However, these electromagnetic responses vanish when the s-polarized terahertz transmission is measured. There is only a transmission minimum at 1.64 THz and the terahertz polarization rotation angle of about 90° is observed. The polarized terahertz transmission amplitudes and spectra detected at orthogonal orientations show that these behaviours are probably attributed to the birefringent effect of the sample.
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Number of references:24