249
Accession number:20125215843434
Title:Measurements of terahertz wavelength using metallic mesh Fabry-Pérot interferometer
Authors:Jiang, Chengyue (1); Cai, Rui (1); Liu, Jinsong (1); Wang, Kejia (1); Wang, Shenglie (1)
Author affiliation:(1) Wuhan National Laboratory for Optoelectronics, College of Optoelectronic Science and Engineering, Huazhong University of Science and Technology, Wuhan, Hubei 430074, China
Corresponding author:Liu, J.(jsliu4508@vip.sina.com)
Source title:Guangxue Xuebao/Acta Optica Sinica
Abbreviated source title:Guangxue Xuebao
Volume:32
Issue:11
Issue date:November 2012
Publication year:2012
Article number:1112009
Language:Chinese
ISSN:02532239
CODEN:GUXUDC
Document type:Journal article (JA)
Publisher:Chinese Optical Society, P.O. Box 80, Xi'an, 710068, China
Abstract:Several metallic mesh Fabry-Pe´rot interferometers (FPI) are designed and manufactured to measure terahertz waves with wavelengths larger than 150 μm (that is less than 2 THz in frequency). Metallic meshes with five different structural parameters whose periods are less than 40 μm and linewidths are less than 10 μm are fabricated by employing optoelectronics micro-nano manufacturing technology. By using terahertz time-domain spectroscopy, the refractive indices of the meshes and the refractive finesses of the FPI in terahertz wave band are obtained. Results show that all the meshes can work well for the interesting wavelengths. In order to test the feasibilities of the FPI, a wavelength of 212 μm is measured. Results show good agreements with theory. Moreover, dependences on the polarization orientation of the terahertz waves and the parallelism of the FPI are also demonstrated, and it is found that the FPI is insensitive to the polarization of the terahertz waves while susceptible to the parallelism of the FPI.
Number of references:18
Main heading:Fabry-Perot interferometers
Controlled terms:Optical devices - Polarization - Refractive index - Terahertz waves - Wavelength
Uncontrolled terms:Manufacturing technologies - Metallic mesh - Micro-nano - Polarization orientation - Structural parameter - Tera Hertz - Terahertz time domain spectroscopy - Time domain spectroscopy
Classification code:711 Electromagnetic Waves - 741.1 Light/Optics - 741.3 Optical Devices and Systems - 941.3 Optical Instruments
DOI:10.3788/AOS201232.1112009
Database:Compendex