440. Title:Second-order bandpass terahertz filter achieved by multilayer complementary metamaterial structures
Authors:Lu, Mingzhi (1); Li, Wenzao (1); Brown, Elliott R. (1)
Source title:Optics Letters
Volume:36
Issue:7
Issue date:April 1, 2011
Publication year:2011
Pages:1071-1073
Language:English
Document type:Journal article (JA)
Abstract:We propose a multilayer complementary metamaterial structure fabricated on a crystal quartz substrate measuring between 100 and 700 GHz. The concept of a second-order terahertz bandpass filter is realized by this structure, and it offers a superior quality factor, steepness of skirts, and out-of-band rejection. Physical limitations on the quality factor and insertion loss have also been studied, including the skin depth of the metal and the optical phonon resonance in quartz. Based on these factors, a series of higher frequency filters has been designed, and simulation results are presented.