315
Accession number:20114214430599
Title:Out-of-plane resonances in terahertz photonic crystal slabs modulated by optical pumping
Authors:Shi, Yulei (1); Zhou, Qing-Li (1); Liu, Wei (1); Zhang, Cunlin (1)
Author affiliation:(1) Key Laboratory for Terahertz Optoelectronics, Department of Physics, Capital Normal University, Beijing 100048, China
Corresponding author:Zhou, Q.-L.(qlzhou@mail.cnu.edu.cn)
Source title:Optics Express
Abbreviated source title:Opt. Express
Volume:19
Issue:21
Issue date:October 10, 2011
Publication year:2011
Pages:20808-20816
Language:English
E-ISSN:10944087
Document type:Journal article (JA)
Publisher:Optical Society of America, 2010 Massachusetts Avenue NW, Washington, DC 20036-1023, United States
Abstract:This paper describes detailed optical-pump-terahertz-probe studies of two-dimensional photonic crystal slabs for propagation perpendicular to the slabs. When the slabs are excited by an 800 nm pump pulse and the effect of shielding by photocarriers is removed, we find that the decaying tail in the transmitted terahertz radiation is strikingly enhanced. The photocarriers weaken guided resonances, but they also greatly enhance the excitation efficiency of guided resonances and the ability of the guided resonances to transfer energy back to the radiation field. This increases the resonance-assisted contribution to transmitted field. The photoinduced resonant extremes agree well with the Fano model.
Number of references:19