

56

Accession number:20122215075293

Title:Spatial dispersion in three-dimensional drawn magnetic metamaterials

Authors:Tuniz, Alessandro (1); Pope, Benjamin (1); Wang, Anna (1); Large, Maryanne C. J. (1); Atakaramians, Shaghik (1); Min, Seong-Sik (1); Pogson, Elise M. (2); Lewis, Roger A. (2); Bendavid, Avi (3); Argyros, Alexander (1); Fleming, Simon C. (1); Kuhlmeier, Boris T. (1)

Author affiliation:(1) Institute of Photonics and Optical Science (IPOS), School of Physics, University of Sydney, NSW, 2006, Australia; (2) School of Engineering Physics, University of Wollongong, NSW, Australia; (3) Materials Science and Engineering, Commonwealth Scientific and Industrial Research Organization, PO Box 218, Lindfield, Sydney, NSW, 2070, Australia

Corresponding author:Tuniz, A.(alessandro.tuniz@sydney.edu.au)

Source title:Optics Express

Abbreviated source title:Opt. Express

Volume:20

Issue:11

Issue date:May 21, 2012

Publication year:2012

Pages:11924-11935

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:We characterize spatial dispersion in longitudinally invariant drawn metamaterials with a magnetic response at terahertz frequencies, whereby a change in the angle of the incident field produces a shift in the resonant frequency. We present a simple analytical model to predict this shift. We also demonstrate that the spatial dispersion is eliminated by breaking the longitudinal invariance using laser ablation. The experimental results are in agreement with numerical simulations. © 2012 Optical Society of America.

Number of references:40

Main heading:Dispersions

Controlled terms:Computer simulation - Metamaterials - Natural frequencies

Uncontrolled terms:Incident fields - Magnetic metamaterials - Magnetic response - Spatial dispersion - Terahertz frequencies

Classification code:711.1 Electromagnetic Waves in Different Media - 723.5 Computer Applications - 951 Materials Science

DOI:10.1364/OE.20.011924

Database:Compendex

Compilation and indexing terms, Copyright 2012 Elsevier Inc.