

标题: Terahertz spinplasmonics in random ensembles of Ni and Co microparticles

作者: Straatsma, CJE (Straatsma, C. J. E.); Johnson, M (Johnson, M.); Elezzabi, AY (Elezzabi, A. Y.)

来源出版物: JOURNAL OF APPLIED PHYSICS 卷: 112 期: 10 文献号: 103904 DOI: 10.1063/1.4765028 出版年: NOV 15 2012

在 Web of Science 中的被引频次: 0

被引频次合计: 0

引用的参考文献数: 19

摘要: Terahertz time-domain spectroscopy has found widespread application due to a number of attractive features including phase-sensitive detection and subpicosecond temporal resolution. Recently, the application of this technique to study ensembles of sub-wavelength ferromagnetic particles resulted in the observation of novel and unusual effects. The shape, relative transmission amplitude, and time delay of a broadband terahertz waveform were sensitive to the magnitude and direction of an applied magnetic field and to the magnetization states of the particles. Furthermore, the addition of a thin coating of nonmagnetic metal (Au) at the surface of the particles had a profound effect on these characteristics. To better understand the new phenomena, a terahertz time-domain spectroscopy investigation of ensembles of ferromagnetic particles is presented in which the test range of magnetic field is extended, including significantly larger magnitude as well as both field polarities. By sweeping the applied field continuously through zero, hysteretic effects are now observed. Furthermore, we show that the effects of a thin nonmagnetic metal coating are not unique to Au. These effects are also observed in particle ensembles in which the ferromagnetic particles are coated with thin Al or Ag films. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.4765028]

入藏号: WOS:000311969800079

语种: English

文献类型: Article

KeyWords Plus: MAGNETORESISTANCE; CHARGE; METALS; SPIN

地址: [Straatsma, C. J. E.; Elezzabi, A. Y.] Univ Alberta, Dept Elect & Comp Engn, Ultrafast Opt & Nanophoton Lab, Edmonton, AB T6G 2V4, Canada

[Johnson, M.] USN, Res Lab, Washington, DC 20375 USA

通讯作者地址: Elezzabi, AY (通讯作者), Univ Alberta, Dept Elect & Comp Engn, Ultrafast Opt & Nanophoton Lab, Edmonton, AB T6G 2V4, Canada.

电子邮件地址: elezzabi@ece.ualberta.ca

出版商: AMER INST PHYSICS

出版商地址: CIRCULATION & FULFILLMENT DIV, 2 HUNTINGTON QUADRANGLE, STE 1 N O 1, MELVILLE, NY 11747-4501 USA

Web of Science 类别: Physics, Applied

研究方向: Physics

IDS 号: 049GF

ISSN: 0021-8979

29 字符的来源出版物名称缩写: J APPL PHYS

ISO 来源出版物缩写: J. Appl. Phys.

来源出版物页码计数: 8