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标题: Dielectric Properties of Ba_{0.7}Sr_{0.3}TiO₃ Film at Terahertz Measured by Metamaterials

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来源出版物: JOURNAL OF THE AMERICAN CERAMIC SOCIETY 卷: 95 期: 4 页: 1167-1169 DOI: 10.1111/j.1551-2916.2012.05072.x 出版年: APR 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: 15

摘要: A metamaterial device with resonance frequency at THz was reported in this article. The device was composed of split-ring resonators (SRR), ferroelectric Ba_{0.7}Sr_{0.3}TiO₃ (BST70) film, and alumina substrates. The SRR of 140 nm thick Au/Ti was fabricated on BST70 film with periodicity of 50 μm, width of 10 μm, and gap of 8 μm. The BST70 thin film was deposited on alumina substrates using a sol-gel technique. Terahertz time domain spectroscopy was used to characterize electromagnetic response of the metamaterial at various temperatures. Finite difference time domain was used to simulate the transmission spectra of the metamaterial at THz frequencies. Dielectric constant of the BST70 film at THz, in the temperature range from 0 degrees C to 100 degrees C, was derived by comparing the simulated resonance frequency with the experimental curves.

入藏号: WOS:000302401600003

语种: English

文献类型: Article

KeyWords Plus: THIN-FILMS; MICROWAVE

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出版商: WILEY-BLACKWELL

出版商地址: COMMERCE PLACE, 350 MAIN ST, MALDEN 02148, MA USA

Web of Science 分类: Materials Science, Ceramics

学科类别: Materials Science

IDS 号: 920JW

ISSN: 0002-7820

29 字符的来源出版物名称缩写: J AM CERAM SOC

ISO 来源出版物缩写: J. Am. Ceram. Soc.

来源出版物页码计数: 3