

Accession number:20114714540545

Title:Properties of defected one-dimensional terahertz plasmonic crystal films in a metal air-gap waveguide

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Source title:Journal of Applied Physics

Abbreviated source title:J Appl Phys

Volume:110

Issue:9

Issue date:November 1, 2011

Publication year:2011

Article number:093101

Language:English

ISSN:00218979

CODEN:JAPIAU

Document type:Journal article (JA)

Publisher:American Institute of Physics, 2 Huntington Quadrangle, Suite N101, Melville, NY 11747-4502, United States

Abstract:We investigated properties of localized modes of one-dimensional terahertz plasmonic crystal films with defects in a metal air-gap waveguide by terahertz time-domain spectroscopy experiments and finite-difference time-domain simulations. A defect was created by varying the width of an air slit at the center of the plasmonic crystal film. The donor (accept)-like defect modes were observed when the width of the defect air slit increases (decreases) from an initial width. The quality factor increases abruptly as the air-gap size decreases, while the defect mode frequency slightly decreases. The high quality-defect mode was examined for terahertz sensor applications.

Number of references:17