44
Accession number:20114414467946
Title:Toward compact millimeter-wave diode in thin stacked-hole array assisted by a dielectric grating
Authors:Beruete, M. (1); Serebryannikov, A.E. (2); Torres, V. (1); Navarro-Ca, M. (3); Sorolla, M. (1)
Author affiliation:(1) Millimeter and Terahertz Waves Laboratory, Universidad Pblica de Navarra, Campus Arrosada, 31006-Pamplona, Spain; (2) Institut fur Hochfrequenztechnik, Technische Universitt Hamburg-Harburg, D-21071 Hamburg, Germany; (3) Experimental Solid State Group, Imperial College London, London SW7 2AZ, United Kingdom
Corresponding author:Beruete, M.(miguel.beruete@unavarra.es)
Source title:Applied Physics Letters
Abbreviated source title:Appl Phys Lett
Volume:99
Issue:15
Issue date:October 10, 2011
Publication year:2011
Article number:154101
Language:English
ISSN:00036951
CODEN:APPLAB
Document type:Journal article (JA)
Publisher:American Institute of Physics, 2 Huntington Quadrangle, Suite N101, Melville, NY 11747-4502, United States
Abstract:Unidirectional transmission in thin stacked hole arrays (SHAs), whose spatial inversion symmetry is broken by adding a dielectric grating at one of the interfaces, is theoretically predicted and experimentally validated in the millimeter-wave regime. It appears at a fixed nonzero angle of incidence due to hybridization of SHA resonances with diffraction effects. In contrast to the earlier suggested structures with the diffraction relevant unidirectional transmission mechanism, the nonsymmetric diode-like structure founded on the intrinsically subwavelength SHA, which supports left-handed propagation, is less than one wavelength thick.
Number of references:23