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标题: Polarizing beam splitter in terahertz regime
作者: Sun, C (Sun Chao); Li, JS (Li Jiu-sheng)
编者: Yao J; Zhang XC; Yan D; Liu J
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摘要: Over the past ten years, electromagnetic terahertz (THz) frequencies region from 100 GHz to 10 THz (or wavelengths of 30 mu m-3mm) have received extensive attention and investigation. Terahertz wave detection enables direct calculations of both the imaginary and the real parts of the refractive index without using the Kramers-Kronig relations. There are many potential applications such as radio astronomy, atmospheric studies, remote sensing, and plasma diagnostics. Photonic crystal (PC) is a low-loss periodic dielectric medium. With special design and construct the PCs can control the propagation of THz wave in certain directions with specified frequencies. In this letter, we present the numerical design and analysis of three kinds of compact terahertz wave beam splitter based on photonic crystals structure. The novel terahertz wave polarizing beam splitter has been designed and calculated through finite element method. The simulation results show that the proposed polarizing beam splitter has high efficiency and a high extinction ratio. We confirm theoretically that the photonic crystal structures can be used for separating TE and TM-polarized modes of the electromagnetic waves in the terahertz range.
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地址: [Sun Chao; Li Jiu-sheng] China Jiliang Univ, Ctr THz Res, Hangzhou 310018, Peoples R China
通讯作者地址: Sun, C (通讯作者),China Jiliang Univ, Ctr THz Res, Hangzhou 310018, Peoples R China
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