490.
标题: Proposal for Efficient Terahertz-Wave Difference Frequency Generation in an AlGaAs Photonic Crystal Waveguide
作者: Chen, T (Chen, Tao); Sun, JQ (Sun, Junqiang); Li, LS (Li, Linsen); Tang, JG (Tang, Jianguan)
来源出版物: JOURNAL OF LIGHTWAVE TECHNOLOGY 卷: 30 期: 13 页: 2156-2162
DOI: 10.1109/JLT.2012.2192908 出版年: JUL 1 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: 42
摘要: We design an AlGaAs-based terahertz photonic crystal waveguide (PCW) to achieve terahertz-wave difference frequency generation (DFG) from near-infrared light sources. The PCW structure provides a tight confinement of terahertz-wave field, resulting in a good mode field overlap of three waves. The unique phase matching condition between two pump waves and terahertz Bloch wave can be satisfied through choosing appropriate waveguide parameters and pump wavelengths. With the coupled-mode equations derived from modal theory for describing the light propagation, we simulate the continuous terahertz DFG process, and a high power-normalized conversion efficiency of 0.7632 x 10(-4) W-1 for 3 THz generation is obtained.
入藏号: WOS:000303892000002
语种: English
文献类型: Article
作者关键词: Difference frequency generation (DFG); photonic crystal waveguides (PCWs); semiconductors; terahertz wave
KeyWords Plus: SLOW-LIGHT; 3RD-HARMONIC GENERATION; SILICON; EMISSION; DESIGN; LASERS
地址: [Chen, Tao; Sun, Junqiang; Li, Linsen] Huazhong Univ Sci & Technol, Sch Optoelect Sci & Engn, Wuhan Natl Lab Optoelect, Wuhan 430074, Peoples R China
[Chen, Tao] Hubei Normal Univ, Sch Phys & Elect Sci, Huangshi 435002, Peoples R China
[Tang, Jianguan] Wuhan Univ Technol, Natl Engn Lab Fiber Opt Sensing Technol, Wuhan 430070, Peoples R China
通讯作者地址: Chen, T (通讯作者),Huazhong Univ Sci & Technol, Sch Optoelect Sci & Engn, Wuhan Natl Lab Optoelect, Wuhan 430074, Peoples R China
电子邮件地址: taochen426@smail.hust.edu.cn; jqsun@mail.hust.edu.cn; forest8008@126.com; jianguan-tang@yahoo.com.cn
出版商: IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC
出版商地址: 445 HOES LANE, PISCATAWAY, NJ 08855-4141 USA
Web of Science 分类: Engineering, Electrical & Electronic; Optics; Telecommunications
学科类别: Engineering; Optics; Telecommunications
IDS 号: 940LW
ISSN: 0733-8724
29 字符的来源出版物名称缩写: J LIGHTWAVE TECHNOL
ISO 来源出版物缩写: J. Lightwave Technol.
来源出版物页码计数: 7