470. 标题: Temperature and bias dependences of defect mode in a photonic crystal containing a photonic-quantum-well defect
作者: Chang, YH (Chang, Yang-Hua); Jhu, YY (Jhu, Ying-Yan); Wu, CJ (Wu, Chien-Jang)
来源出版物: JOURNAL OF OPTOELECTRONICS AND ADVANCED MATERIALS 卷: 14 期: 3-4 页: 185-192 出版年: MAR-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: 24
摘要: The temperature- and bias-dependent properties of the defect mode in a one-dimensional photonic crystal (1D PC) containing a photonic-quantum-well (PQW) defect are theoretically investigated. The temperature dependence is studied by simultaneously incorporating thermal expansion and thermal-optical effects in the constituent layers. As the thickness and index of refraction of each layer are modulated by temperature, a tunable filter working in the visible region is proposed. The shift of transmittance peak per 100 degrees C is around 2 nm, depending on the value of m, which is the stack number of the PQW and ranges between 1 and 3 in our study. It is found that the third transmittance peak in the case of m = 3 is most sensitive to temperature (2.43 nm per 100 degrees C), whereas the second transmittance peak of m = 3 is the sharpest. The bias dependence is studied by considering the electro-optic effect of the defected layer. The shifts of transmittance peaks are found to be in the range of 0.129 similar to 0.188 nm per 1 kV of applied voltage. Additionally, the second transmittance peak of m = 3 is most sensitive to voltage, and it is also the sharpest peak.
入藏号: WOS:000304429900001
语种: English
文献类型: Article
作者关键词: Photonic crystal; Photonic quantum-well; Thermal effect; Electra-optic effect
KeyWords Plus: TERAHERTZ FREQUENCIES; TUNABLE FILTER; TRANSMISSION; TRANSMITTANCE; RANGE
地址: [Wu, Chien-Jang] Natl Taiwan Normal Univ, Inst Electroopt Sci & Technol, Taipei 116, Taiwan
[Chang, Yang-Hua] Natl Yunlin Univ Sci & Technol, Dept Elect Engn, Yunlin 640, Taiwan
[Jhu, Ying-Yan] Natl Yunlin Univ Sci & Technol, Grad Sch Optoelect, Yunlin 640, Taiwan
通讯作者地址: Wu, CJ (通讯作者),Natl Taiwan Normal Univ, Inst Electroopt Sci & Technol, Taipei 116, Taiwan
电子邮件地址: jasperwu@ntnu.edu.tw
出版商: NATL INST OPTOELECTRONICS
出版商地址: 1 ATOMISTILOR ST, PO BOX MG-5, BUCHAREST-MAGURELE 76900, ROMANIA
Web of Science 分类: Materials Science, Multidisciplinary; Optics; Physics, Applied
学科类别: Materials Science; Optics; Physics
IDS 号: 947KW
ISSN: 1454-4164
29 字符的来源出版物名称缩写: J OPTOELECTRON ADV M
ISO 来源出版物缩写: J. Optoelectron. Adv. Mater.
来源出版物页码计数: 8