

论文

镀膜激光全息光子晶体梳状滤波特性研究

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摘要:

提出将成熟的光学薄膜技术和激光全息技术结合起来制作一维镀膜激光全息光子晶体,用特征矩阵方法研究了该光子晶体的梳状滤波特性,发现:随着两端薄膜的周期数增大,透射峰的中心波长向中间收拢,透射峰之间的间隔变小;随着激光全息光子晶体的周期数增大,透射峰的个数增加,透射峰之间的间隔变小;随着制作激光全息光子晶体时的激光的强度增大,透射峰的中心波长向长波方向移动,透射峰的宽度变小。

关键词: 光子晶体;光学薄膜;激光全息;梳状滤波;特征矩阵

Interleave filter properties of 1-D coated laser hologram photonic crystal

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Abstract:

Optical thin-film technology and laser holographic technology were combined to fabricate 1-D coated laser hologram photonic crystals. The interleave filter characteristics of 1-D coated laser hologram photonic crystal were studied with the eigen matrix. The central wavelengths of transmittance peaks move to centre and the intervals between transmittance peaks decrease with the increase of both sides thin film's periodicity. The number of transmittance peak increases and the intervals between transmittance peaks decrease with the increase of laser hologram photonic crystal's periodicity. The central wavelengths of the transmittance peaks shift to long-wave direction and the interval between transmittance peaks decrease with the increase of laser's intensity.

Keywords: photonic crystal; optical thin-film; laser hologram; interleave filter; eigen matrix

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