

论文

单层膜的反常色散研究

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摘要:

利用等效折射率概念分析了SiO<sub>2</sub>单层膜反常色散出现的原因,并在1.1 m镀膜机上证明了理论分析的合理性.结果表明,理论分析与实验结果一致,沿薄膜厚度方向折射率的对称周期变化使薄膜的等效折射率变化在可见光波段与致密膜层的变化不一致,表现出反常色散的现象.膜厚方向折射率变化周期越大,等效折射率随波长增加的趋势就越大,薄膜表现出的反常色散特性越明显.沿膜厚方向折射率变化幅度的对色散特性影响次之.

关键词: 光学薄膜 反常色散 等效折射率 变折射率

Anomalous Dispersion of SiO<sub>2</sub> Single-layer Coating

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Abstract:

Utilizing the concept of equivalent refractive index,the dispersive model of single SiO<sub>2</sub> layer was presented based on the discussion of refractive index variation with the incident flux angle.The dispersion and transmittance curves of the SiO<sub>2</sub> films were obtained.The experiment shows that it is periodic variation of refractive index along film thickness that made its equivalent refractive index related to wavelength different to the one of dense film.The larger the index variation range and its period along film thickness,the more anomalous dispersion the films performed.

Keywords: Optical thin film Anomalous dispersion Equivalent refractive index Varying refractive index

收稿日期 2008-05-06 修回日期 2008-09-26 网络版发布日期 2009-08-25

DOI:

基金项目:

通讯作者: 李香波

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