

光学元件与制造

254nm低通滤光片的研制

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摘要:

根据紫外光学系统的设计要求,在K9基底上研制了254nm高反射率、可见光谱区高透过率的低通滤光片。根据膜系设计理论,通过针法优化,获得了干涉型低通滤光片的膜系;对电子束蒸镀HfO2和MgF2材料进行了研究,解决了材料喷溅的问题,减少了薄膜的吸收;采用考夫曼离子源,通过优化工艺参数,提高膜层致密性,解决了光谱曲线漂移的问题,改善了成膜质量。

关键词: 紫外低通滤光片 考夫曼离子源 电子束蒸发 材料吸收

Development of 254nm low-pass filter

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Abstract:

According to the designed requirements of UV systems, a low-pass filter was studied and developed on K9 glass substrates with high reflectivity at 254nm and high transmittance in visible spectrum. According to the film designed theory, low-pass interference filter film was obtained by optimizing Needle method. The electron-beam evaporation materials of HfO2 and MgF2 were studied. The splash was solved and the absorption was decreased. By using Kaufman ion source, the film density was improved, the drift of spectral curves was solved and the quality of the film was improved by optimizing the process parameters.

Keywords: UV low-pass filter Kaufman ion source electron beam evaporation material absorption

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参考文献:

[1] 姚春龙,王银河,张辉.近紫外冷反射镜的镀制研究[J].真空,2007,44(3):9-11.
YAO Chun-long, WANG Yin-he, ZHANG Hui. Coating technique for near UV cold-mirror reflector [J]. Vacuum, 2007,44(3):9-11. (in Chinese with an English abstract)

[2] DELONG R. UV coatings: materials and applications [J]. CERAC Coating Materials News, 2002,12(2):1-4.

[3] 钟迪生.真空镀膜[M].沈阳:辽宁大学出版社,2001:216-221,181-190.
ZHONG Di-sheng. Vacuum deposition [M]. Shenyang: Liaoning University Press, 2001:216-221,181-190. (in Chinese)

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[4] 唐晋发,顾培夫,刘旭,等.现代光学薄膜技术 [M] .杭州: 浙江大学出版社, 2006:112.

TANG Jin-fa, GU Pei-fu, LIU Xu, et al. Modern optical thin film technology [M] . Hangzhou: Zhejiang University Press, 2006: 112. (in Chinese)

[5] 林永昌,顾永琳,张诚,等.针法与初始膜系设计 [J] . 光学学报, 1999,19(10):1433-1436.

LIN Yong-chang, GU Yong-lin, ZHANG Cheng, et al. Needle method and initial coating design [J] . Acta Optica Sinica, 1999,19(10): 1433-1436. (in Chinese with an English abstract)

[6] 李守中,杨益民,黄良甫,等.考夫曼型离子源工作稳定性研究 [J] .光学仪器, 1999,21(4-5): 44-46.

LI Shou-zhong, YANG Yi-min, HUANG Liang-pu, et al. Research for working stability of Kaufman ion sources [J] . Optical Instruments, 1999,21(4-5):44-46. (in Chinese with an English abstract)

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2. 潘永强;朱昌;弥谦;宋俊杰.电子束蒸发TiO₂薄膜的光学特性[J]. 应用光学, 2004,25(5): 53-55

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