

# Properties of gradient index antireflection layer of the phase separable glass \*

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Gradient refractive index antireflection layer is produced by chemical leaching process applied to the phase-separable glass and is now of great interest for coating materials in high power fusion laser system. The reflection is lower than 0.5 percent in the regime 0.4–1.4 micron. Using a single inhomogeneous thin film model whose refractive index changes linearly from air side to glass side with film thickness, the gradient index profiles are estimated from the reflection characteristics. Refractive index of the layer at the glass side ( $NF(G)$ ) is equal to that of the glass and is independent of leaching time, while refractive index at the air side ( $NF(A)$ ) rapidly decreases with leaching time and becomes 1.09 at 6 minutes. The kind of leaching solutions also affect  $NF(A)$  and  $NF(G)$ , and as a result, the wavelength dependence of the reflection. More flat and lower reflection layers of the function of wavelength are obtained for the samples leached in the solution of the mixture of  $NH_4F \cdot HF$  and  $HNO_3$ .

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## 可分相玻璃的折射率渐变增透涂层的特性

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根据用在可分相玻璃中的化学沥滤过程产生了折射率渐变的增透涂层,目前,这个方法在高功率聚变激光系统的涂膜中引起很大的兴趣。在0.4~1.4微米区,反射率低于0.5%。应用一个折射率随薄膜厚度从空气一边到玻璃一边线性变化的非均匀薄膜模型,由反射特性估计了渐变折射率剖面。在玻璃那边的膜层折射率( $NF(G)$ )等于玻璃的折射率而与沥滤时间无关,而空气那边的折射率( $NF(A)$ )随沥滤时间迅速降低,在6分钟时变为1.09。沥滤溶液的类型也影响 $NF(A)$ 和 $NF(G)$ ,其结果,反射率与波长有关。对于在 $NH_4F \cdot HF$ 和 $HNO_3$ 混合溶液中沥滤的样品,得到与波长有关的较低折射率的很平的涂层。