

### 非线性光学

## 采用蒸发法实现KDP单晶柱面扩展

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#### 摘要:

传统的人工生长大尺寸KDP(磷酸二氢钾)单晶过程中,柱面生长很慢,锥面的生长速度较快。实验利用恒温蒸发溶剂的办法,生长出了截面较大的KDP单晶体(8mm×22mm×45mm)。柱面的生长速度较传统的溶液降温法得到了有效的提高,尤其是向下的方向更加明显,这主要是由于液面下降,溶质边界层浓度梯度发生持续变化促使晶体快速生长造成的。对溶液的提纯、预热以及起始温度选择等积累了经验。实验也为后续的晶体生长打下了很好的基础。

**关键词:** 非线性光学 KDP晶体 溶液降温法 边界层

## Cylindrical spreading of KDP single crystal by method of vaporization

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#### Abstract:

The cylindrical surfaces of the KDP(potassium dihydrogen phosphate) single crystal grow very slowly and the conical surfaces grow fast during the crystal growth under the traditional method. A KDP single crystal with large cross section (8mm×22mm×45mm) is gained at some constant temperature by vaporizing the solvent in our experiment. The experiment can be used for reference of KDP single crystal growth by pulling method. Compared with the traditional method, the growth rate along the cylindrical surface is improved effectively, especially the direction downward, which is on account of the dropping of the liquid level and the continued change of the solute boundary layer. The experience in purifying and preheating the solution and choosing the initial temperature is accumulated. The experiment is also useful for our later KDP crystal growth research.

**Keywords:** nonlinear optics KDP crystal temperature-lowering method boundary layer

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### 扩展功能

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