

## 激光与光电子技术应用

### 基于光学材料阈值测量时激光对焦方法研究

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#### 摘要:

为了抑制非线性光学效应对光学材料表面损伤阈值测量的影响,设计了一种新的激光焦点对焦方法,利用激光对空气电离所发射的等离子体光线作为参照物进行焦点定位,对焦过程中,激光电离焦点处的空气形成等离子体亮点,该亮点通过光学材料表面形成镜像,由镜面成像原理可知样品表面位于等离子体亮点和其镜像连线的中点,调节点和镜像重合即可完成对焦。结果表明,该方法操作简便、精度高,这对光学材料的表面损伤阈值测量具有重要意义。

关键词: 光学设计 非线性光学效应 阈值测量 焦点定位

### Research of laser-focusing method while measuring the damage threshold on optical material surface

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#### Abstract:

A new laser focusing method was proposed to reduce the nonlinear optical effect for the measurement of damage threshold on optical material surfaces. The focus is located by utilizing the plasma beam as the reference object which is emitted by the air ionization. In the focusing process, an image is formed by a plasma luminous point which is formed by the air ionization. Based on the mirror image principle, the sample surface is in the middle of the luminous point and the image, the focusing process is completed when the luminous point and the image coincide. In conclusion, the method is simple operation and high precision, it is important to the measurement of damage threshold on optical material surfaces.

Keywords: optical design nonlinear optical effect damage threshold measurement focus location

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