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## 论文

### 高重频电光调Q Nd:YAP红光激光器

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摘要:

研制了一台基于Nd:YAP晶体线偏振激光输出特性而省略起偏器方式的电光调Q高重频Nd:YAP红光激光器.通过对Nd:YAP晶体的热透镜焦距的实验测量,优化设计了三镜折叠腔的各个参量,采用LN晶体电光调Q、KTP晶体II类匹配腔内倍频,最终获得670 nm红光输出.在重复频率1 000 Hz、抽运电流75 A时,获得了峰值功率28.3 kW、脉宽76 ns的偏振红光输出,倍频效率为37.1%.

关键词: 激光技术 折叠腔 电光调Q 腔内倍频

### High Repetition Electro-optical Q-switched Nd:YAP Red Laser

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Abstract:

The high repetition electro-optical Q-switched red laser is studied based on the polarized characteristic of Nd:YAP crystal. The parameters of the three-mirror folded are optimized by the thermal focus length of Nd:YAP crystal. The electro-optical Q-switched of LN crystal and type II noncritical phase-matching intracavity frequency-

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doubling of KTP crystal are adapted. Then the output peak power with 28.3 kW, about 76 ns of pulse duration at 670 nm and the frequency doubling efficiency of 37.1% are obtained in the condition of 75 A pump current and the electro-optical Q-switched repetition rate of 1 kHz.

Keywords: Laser technique    Folded cavity  
Electro-optical Q-switching    Intracavity frequency-doubling

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