



## 器件制备及器件物理

### 全固态被动调Q皮秒激光技术研究进展

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**摘要：**全固态被动调Q激光技术在产生皮秒脉冲方面有较快发展。与锁模激光器相比,被动调Q皮秒激光器成本低、结构简单、易于校准光路,避免了锁模激光器结构复杂、机械敏感度高、光路校准困难等缺点,并且同样能够输出单脉冲能量可观、重频合适的皮秒量级短脉冲,因此拥有较高的实用价值。本文讨论了全固态被动调Q皮秒激光技术领域的两种典型技术路线以及对调Q皮秒脉冲输出的后续处理技术,包括非线性技术和激光放大技术等,并介绍了国内外相关研究团队在该领域所做的工作及其突破性进展。

**关键词：**全固态 被动调Q 皮秒激光技术 微片激光技术 非线性技术

#### 本刊中的类似文章

1. 全固态塑料电致变色器件[J]. 2007,28(2): 255

## Research Progress of All-solid-state Passively Q-switched Picosecond Laser Technology

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**Abstract:** In recent years, all-solid-state passively Q-switched laser technology gets a rapid progress in obtaining picosecond pulses. Comparing with mode-locked lasers with complicated structure, sensitive and difficult alignment, these Q-switched picosecond lasers show great practical potentials for their characters of low cost, simple structure and easy alignment. These Q-switched lasers can provide picosecond pulses with considerable energy, and with the advantage of adjustable pulse repetition rate. In this paper, two existing passively Q-switched picosecond laser approaches, namely, Cr:YAG microchip lasers, semiconductor saturable absorber mirror (SESAM) microchip lasers, are discussed accompany with the consideration of further treatment to the latter one by nonlinear optical processing and amplification, which are introduced to get narrower pulse width and higher pulse energy. In two categories, we review remarkable work in this field along with breakthroughs of them.

**Keywords:** all solid-state passively Q-switching picosecond laser technology microchip laser technology nonlinear optics technology

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