

论文

高功率LD阵列泵浦激光器小型化研究

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摘要:

为满足一些武器装备对激光系统小型化及输出激光光斑均匀性较高的要求, 通过设计LD侧面对称半环状泵浦的泵浦方式, 使得输出的激光光斑形状基本为圆形, 激光光斑的均匀性有了较大提高。采用凹面全反射镜补偿热效应以及设计紧凑激光谐振腔型, 在注入电流60A、频率为20Hz时, 得到平均单脉冲能量为96mJ (脉冲能量波动小于6%)、脉宽为10ns、发散角为3mrad的近似圆形激光输出, 激光系统在高温50℃时工作稳定。

关键词: 半导体激光器;侧面泵浦;激光照射系统设计

Miniaturization of laser pumped by high-power LD array

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Abstract:

The LD side-pumping structure was designed to meet the requirement of miniaturization and spot uniformity of the laser system for weapon systems. The compact laser resonator was designed. In this design, the thermal effect is compensated by the total reflection concave mirror. The laser output, whose average single pulse energy is 96mJ (energy fluctuation <6%), pulse width is 10ns and divergence angle is 3mrad was obtained as the current is 60A and the frequency is 20Hz. The laser system can still work stably when the temperature rise to 50℃.

Keywords: LD; side pump; design of laser illuminator system

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