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Numerical investigation of TRIP mixing mechanism in CW DF/HF chemical laser

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Abstract: A continuous wave DF/HF chemical laser adopting TRIP technique has been numerically studied. According to the 3 dimensional flowfield with chemical reaction and without lasing, the simulation results show that the mixing enhancement of TRIP jets is obvious. The flow streams diffuse more quickly to the central line of the secondary nozzle (about 5 mm behind the nozzle exit plane), and the small signal gain is higher than that in the cases without TRIP jets. The mixing mechanism is analyzed to be stretching and distorting the interface between main and secondary streams. The TRIP jets creat weak vortices at the same time which dissipate soon after generation and affect the flowfield mildly.

Key words: chemical laser; TRIP; mixing enhancement; numerical simulation

· 快讯 ·

大功率光纤激光合成功率突破 1 kW*

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2008 年 12 月 24 日, 中国兵器装备研究院大功率激光实验室成功完成了 7 路光纤激光组束合成实验, 在 7 路光纤激光输出总功率为 1 288 W 的情况下, 通过自制的 7×1 熔融拉锥耦合器成功实现激光合成输出 1 002 W, 其合成效率为 77. 8%。突破了大功率熔融拉锥、锥区热管理、光纤激光合成等关键技术。光纤激光器所用的是烽火公司的 40 μm/600 μm 的掺镱光纤, 采用国内光纤拉制的耦合器承受激光功率超过 1 kW, 是国内第一家完成光纤激光合成功率输出超过 1 kW 的单位。



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