

High repetition rate electric discharge lasers

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Fast electric discharge has been used successfully to pump CO₂-lasers, N₂-lasers and excimer lasers. For many applications, it is desirable to have high average output power, which may be achieved by high pulse-repetition-rate. To generate high repetition-rate gas halide laser action, a fast flow system and a pulse generator with short voltage and current rise-time and high repetition rate are needed. Problems associated with the fast flow such as flow non-uniformity, acoustic waves, and turbulence are discussed. The performance of a high repetition-rate pulse-generator using a multiple-circuit, a pulse-forming-line and hydrogen thyratron switches is described.

高重复率放电激光器

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快速放电已被成功地用于激励二氧化碳激光器、氮分子激光器以及准分子激光器。对许多应用来说,最好是有高的平均输出功率,这可以通过高脉冲重复率来达到。为了使高重复率的稀有气体卤化物激光器运转,需用快速流动系统以及电压、电流上升时间短和重复频率高的脉冲发生器。本文讨论了与快速流动有关的非均匀流动、声波和湍流等问题。并叙述了应用多电路的高重复率脉冲发生器、脉冲形成线以及充氢闸流管开关的性能。