

# Discharge excited rare gas halide lasers

*N. Djeu*

(Naval Research Laboratory)

Washington, D. C. 20375, Tel: (202) 767-3217

Rare gas halide lasers are capable of providing efficient, highpower radiation in the spectral region from the near UV to the vacuum UV. These lasers can be pumped by an electrical discharge if appropriate UV or X-ray preionization is provided. At present, single pulse energy in excess of 1 J and average output power in excess of 100 W have been obtained from discharge excited rare gas halide lasers. The performance of specific rare gas halide systems will be reviewed.

All rare gas halide lasers offer some degree of tunability within its gain bandwidth. Narrow band, tunable output is essential for applications in spectroscopy, photochemistry and detection of atoms and molecules. A convenient way to efficiently extract all the energy from a rare gas halide laser in a pre-selected narrow bandwidth region is the use of injection locking. Experimental results on the XeCl laser in this connection will be discussed.

## 放电激发的稀有气体卤化物激光器

*N. Djeu*

(海军研究所)

稀有气体卤化物激光器能在近紫外到真空紫外波段提供高效高功率的辐射。若提供合适的紫外或X射线预电离，这些激光器可以用放电来泵浦。目前放电激励稀有气体卤化物激光器的单脉冲能量已超过1焦耳，平均输出功率已超过100瓦，本文将对特定的稀有气体卤化物系统的性能作一评述。

所有的稀有气体卤化物激光器在其增益带宽内都具有某种程度的可调谐性。窄带、可调谐输出主要应用于光谱学、光化学和原子与分子的探测。在预先选定的窄带区域，从稀有气体卤化物激光器中提取全部能量的方便方法是采用注入锁模。在这种意义上本文将讨论XeCl激光器的实验结果。