

Abstract Submitted
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Multiband carbon monoxide laser (2.5 – 4.0 and 5.0 – 6.5 micron) pumped by capacitive slab RF discharge ANDREY IONIN, ANDREY KOZLOV, LEONID SELEZNEV, DMITRY SINITSYN, Lebedev Physical Institute of Russian Academy of Sciences, LEBEDEV PHYSICAL INSTITUTE OF RUSSIAN ACADEMY OF SCIENCES TEAM — Overtone lasing and fundamental band tuning was for the first time obtained in a carbon monoxide laser excited by repetitively pulsed capacitive slab RF discharge (81.36 MHz). RF discharge pulse repetition rate was 100–500 Hz. The active volume was 3x30x250 cubic mm. Laser electrodes were cooled down to 120 K. Gas mixture CO:air:He at gas pressure 15 Torr was used. The optical scheme “frequency selective master oscillator - laser amplifier” was applied for getting fundamental band tuning. Single line lasing with average power up to several tens of mW was observed on about 100 rotational-vibrational transitions of CO molecule within the spectral range 5.0–6.5 micron. Multiline overtone lasing was observed on about 80 spectral lines within the spectral range 2.5-4.0 micron, with maximum single line average output power 12 mW. The total output power of the slab overtone CO laser came up to 0.35 W, with laser efficiency 0.5 percent. The results of parametric studies of capacitive slab RF discharge in carbon monoxide mixtures, and overtone and fundamental band CO laser characteristics are discussed.

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