

# Investigation of Gold Catalyst Influence on the Radiation Efficiency of Slab CO<sub>2</sub> Laser

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The paper presents the results of experimental investigation of output power radiation and efficiency of RF-excited sealed-off slab CO<sub>2</sub> laser. The efficiency up to 19-20% was obtained in the range of 200 W to 360 W of output laser power.

We performed our investigation with a slab sealed-off RF-excited CO<sub>2</sub> laser of planar configuration. The discharge channel was formed by two aluminium alloy electrodes (60×600 mm), separated by 2 mm discharge gap. Gold coating on electrode surfaces was used [1,2].

The study was carried out in CO:CO<sub>2</sub>:N<sub>2</sub>:He:Xe mixture at 60 – 90 Torr for CW mode of operation. In Fig.1 are shown the dependencies of output power and laser efficiency on the input RF power (81 MHz). The measurements of output power were performed by the Coherent and Ophir detectors. The total pumping power was limited by RF power supply.

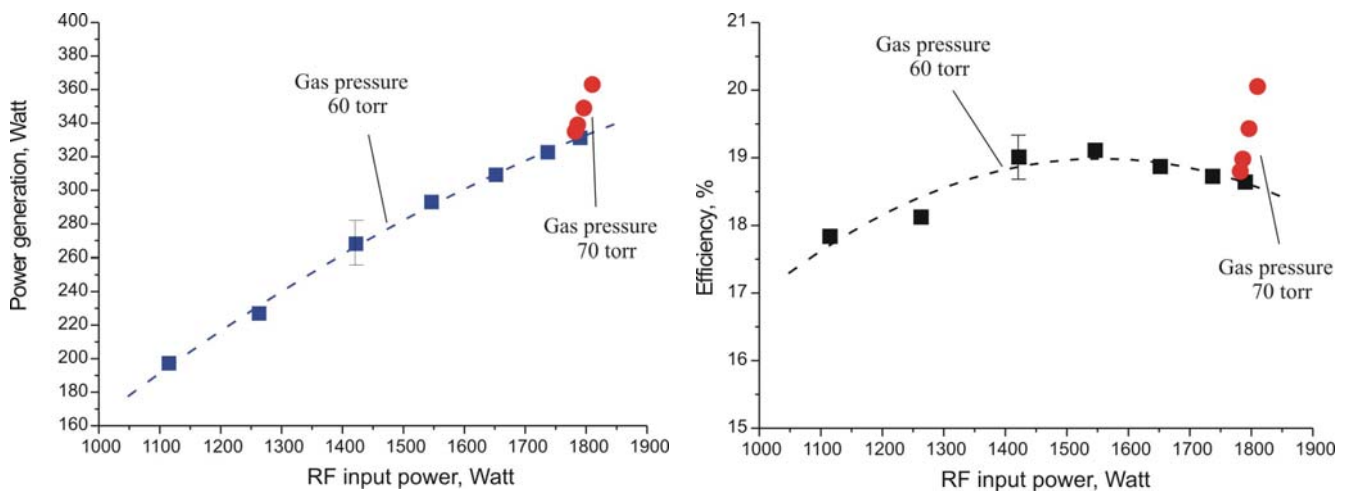


Fig.1. Measured dependencies of laser power and efficiency on average pumping power.

- [1] Macken J.A., Yagnik S.K. and Samis M.A., IEEE J. Quantum. Electron. **25**(7), 1695-1703 (1989)
- [2] Starostin S.A., Udalov Y.B., Peters P.J.M. and Witteman W.J., Appl. Phys. Lett. **77**(21), 3337-3339 (2000)

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