Impulse-Periodical HF (DF) – Laser of Atmospheric Pressure with Impulse Repetition Frequency Up to 2200 Gz

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The aim of the present work is to define ways of reaching limit initiation frequencies. According to this point the present work is supposed to solve this problem and continues the previously published investigation results [1, 2].

The work of electro charge impulse-periodical HF (DF)-laser of the atmospheric pressure of the closed cycle with preionisation by the capacity discharge on the active mixture SF 6 +H2(D2) + He was studied experimentally. The basic parameters of the laser as well as the description of experiments and analysis of the results are given. It's shown that the application of capacity pre-ionisation discharge in combination with the application of blade electrodes and considerable dilution of the working mixture with He (up to the atmospheric pressure) allows to obtain high spatial uniformity of the energy deposition into the main discharge. At relatively low values of the number of the working mixture exchanges we obtained average emission power of 40 Wt at impulse repetition frequency up to 2000 Gz and technical capacity – 2% in the spectral field of HF-laser and at 33 Wt at impulse repetition frequency up to 2200 Gz and technical capacity – 1.6 % in the spectral field of HF-laser.

[1] Butsykin I.L., Velikanov S.D., Yevdokomov P.A. and others "Quantum Electronics" **31**, 957-961 (2001)

[2] Velikanov S.D., Zapolskii A.F., Frolov Y. N. "Quantum Electronics" **24**, 11-14 (1997)

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