

Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

The analysis of OIL with EDSOG on two-dimensional gas-dynamic model¹ ALEXANDER CHUKALOVSKY, Skobeltsyn Nuclear Physics Institute of Lomonosov Moscow State University , KONSTANTIN KLOPOVSKY, TATYANA RAKHIMOVA, YURI MANKELEVICH, OLGA PROSHINA — At present intensive investigations on developing the effective electric discharge singlet oxygen generator (EDSOG) for oxygen-iodine laser (OIL) are carried out. For the last five years the gain and laser power have been increased about 80 times from the moment of the first demonstration of generation due to improvement of EDSOG using transverse RF-discharge (81 MHz). But to date there is a problem of low efficiency ($\leq 1\%$) of energy transfer from SO to iodine atoms in this system. The detailed analysis of the processes in OIL with EDSOG influencing on gain and gas temperature was performed on developed two-dimensional self-consistent gas-dynamic model with detailed chemistry for subsonic flow case. The simulations were in good agreement with experimental data. The goal of this work was to find optimal conditions for the continuous regime for the OIL with EDSOG utilized in at pressure $P=10$ Torr..

¹The study was supported by the Russian Scientific Schools Program (NSh 3322.2010.2) and state contract (N 02.740.11.5108).

Alexander Chukalovsky
Skobeltsyn Nuclear Physics Inst. of Lomonosov Moscow State University

Date submitted: 14 Jun 2010

Electronic form version 1.4