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This book contains the materials on the fundamental and applied problems of pulsed lasers. It may be interesting for researches and engineers working in the sphere of quantum electronics, spectroscopy, plasma physics, medicine, remote sensing and laser technologies.

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E-12

OPTICAL CHARACTERISTICS OF DBD DRIVEN COLD PLASMA NEEDLE RADIATION AT ELEVATED PRESSURES

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The data on optical parameters of the cold plasma needle formed in nitrogen and air at elevate pressure thought the dielectric barrier discharge are given. The modeling of process allows to judge characteristic times of breakdown development in a discharge gap. The conclusion about availability of the offered setup for formation of plasma needle in the specified conditions is made.

The work is performed in the framework of the Russian Science Foundation (the Project No. 14-29-00052).

E-13

DBD-DRIVEN Xe_2 EXCILAMP RADIATION POWER CONTROL BY PRESSURE JUMP METHOD

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The pressure jump method for study of energy distribution DBD-driven Xe_2-excilamp has been applied. The analytical expressions for account of heat power of discharge plasma (W) and full thermal power of lamp (P_T) are proposed.

It is shown that maximum of radiant power is reached at duration of excitation voltage pulse of 500 ns, and the pulsed UV power maximum is reached at pulse duration of 100 ns. It is found, that the optimum mode of excilamp operation corresponds to the maximal value of a difference $P_T - W$.

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E-14

THE EFFECT OF CONVECTION RATE ON ENERGY CHARACTERISTICS OF Xe_2 EXCILAMP

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The design of barrier discharge excilamps is specially offered for convection processes investigation. It is experimentally shown, that the new design allows to increase of convection rate and, consequently, Xe_2^* molecules vacuum ultraviolet radiation intensity and radiation stability.

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