

KINETICS OF PLASMA CHEMICAL
REACTIONS PRODUCING NITROGEN
ATOMS IN THE GLOW DISCHARGE
IN A NITROGEN–ARGON GAS MIXTURE

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S u m m a r y

The problem of determining the content of nitrogen atoms in the low-pressure glow discharge (GD) plasma in a nitrogen–argon gas mixture has been considered. The balance of the nitrogen atomic concentration includes for the generation of nitrogen atoms in the course of the molecular nitrogen dissociation by the electron impact, the interaction of nitrogen molecules with metastable Ar, and the loss of nitrogen atoms in the diffusion process followed by the heterogeneous recombination at a GD cathode. The influence of the gas mixture composition on the atomic nitrogen generation is determined by numerical calculations, whereas the plasma parameters are found experimentally using the probe method. The electron energy distribution is determined by numerically integrating the Boltzmann equation written in the binomial approximation for a mixture of molecular nitrogen and argon.