ON THE APPLICATION OF A PLASMA-BEAM DISCHARGE IN PLASMA CHEMISTRY

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Abstract

A powerful steady-state plasma-beam discharge with the parameters $n_e \sim 10^{13} cm^{-3}$, $I \sim 20$ a, $V \sim 30$ kev, $H \sim 10^3$ Oe is considered theoretically. It is shown that development of a stream instability causes a non-Maxwellian form of the distribution function with an average electron energy in the plasma of the order of the dissociation energy. The concentration of the molecules in the neutral gas flux moving across the magnetic field may reach $10^{16} cm^{-3}$. In this case the dissociation of the molecules due to electrons will be complete, and the area of the flux cross section may be $10^3 cm^2$.