PROBING OF A CHEMICALLY ACTIVE PLASMA WITH A MOLECULAR BEAM

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Abstract

The reduction rates of halogenides of metals present in non-equilibrium plasmas with $T_e \gg T_i$, T gase has been studied. The reduction rate is determined from the bombardment of a plasma target with a neutral molecular beam. The plasma of $n_e \sim 10^{10} cm^{-3}$, $T_e \sim 3$-10 ev is produced in the Penning discharge (magnetic field $H \sim 0.5$ - 1.0 kOe, voltage 3 kv, working gas - He, $p \sim 10^{-4}$ - 10^{-2} Torr). A flux of the NaCl molecules moves perpendicular to the magnetic field. To determine the plasma parameters a double floating probe technique has been used. The dissociation products are distinguished from the Na 3^2p - 3^2S doublet spectral intensities. A mechanism of and channels of the dissociation due to an electron impact in a nonisothermal plasma are discussed.