

STATIONARY SLIGHTLY-IONIZED PLASMA CENTRIFUGE

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Abstract

A steady-state slightly-ionized noble gas plasma produced by a discharge in crossed electric $E = 400$ v/cm and magnetic $H = 10$ kOe fields has been studied. It is shown that the discharge is stable at the chamber gas pressures as low as 10^{-3} mm Hg and magnetic fields greater than 5 kOe. The plasma density measured by a Langmuir probe was found to be $n_e \approx 10^{11} \text{ cm}^{-3}$ and the electron temperature $T_e \approx 50$ ev. Spatial separation of light and heavy atoms due to plasma rotation in crossed electric and magnetic fields was observed. The separation yield was measured mass-spectrometrically. Such a system can be used as a plasma-chemical reactor in which the quenching problem becomes simpler due to spatial separation of the reaction products.