

Frequency dependence of ion energy at the outlet of a capacitive RF discharge placed in an external magnetic field with a predominant radial component

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Received 11.04.2024; accepted 3.05.2024

In this article, the frequency dependence of the energy and current of ions at the output of an RF plasma source with SPT geometry has been investigated. It has been shown that the ion energy is maximal when operating at a frequency of 6.8 MHz. An increase in operating frequency is accompanied by a decrease in ion energy. The ion current depends nonmonotonically on frequency. At frequencies less than 27.12 MHz, an increase in ion energy is accompanied by a decrease in current, and a decrease in energy by an increase in current. Increasing the frequency to 27.12 MHz does not lead to an increase in the ion current.

Keywords: high-frequency, electric rocket thruster, capacitive, discharge, plasma, ions, ion energy, frequency.

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