

EFFECT OF A PULSE MAGNETIC FIELD ON A HIGH PRESSURE PLASMA

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ABSTRACT

An r.f. induction plasma torch is a convenient source for the production of high temperature, and steady dense plasma to study the ionic process in this plasma. The temperature of this torch, supplied with argon, remains around 10,000 K for a wide range of gas flow rate and r.f. power, although the size of the plasma varies with gas flow rate and r.f. power. The application of a pulse magnetic field, however, has shown to increase the plasma temperature by several thousand K.

The application of the pulse field has been found to produce oscillation on the surface of the plasma. Because of the increased temperature and conductivity the skin depth of the pulse applied field is found less than 1.4 cm, which is the radius of the plasma.