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Development of a small sized plasma jet by using a high current glow discharge MASAYUKI WATANABE, Nihon University, Y.SUZUKI TEAM, M.MIYAHARA TEAM, S.IKEYA TEAM, N.NOGERA TEAM, T.KAMADA COLLABORATION — Various technological applications demand an efficient plasma jet because the plasma jet can generate the high temperature and high-speed plasma flow easily. In this research, a small sized plasma jet by applying a modified pseudo-spark discharge (PSD) has been developed. Since a large number of electrons supplies from the PSD cathode cavity to the plasma discharge, the discharge can keep the glow mode even if the discharge current exceeds the several kilo amperes high. Additionally, an electromagnetic force accelerates the plasma, similar to the MPD Thruster. The size of the plasma jet device is as follows; the diameter of the plasma jet device is about 20mm, diameters of the cathode and anode holes are 5mm and 10mm. The maximum discharge current is about 6kA and its half period is about 0.1ms on the breakdown voltage of about -1kV. The temperature of the plasma jet was a few eV and the density was in the order of 10^{19} m^{-3} . This density will depend on the volume inside the cathode cavity. The durability of the electrodes has been tested at the present time.

Prefer Oral Session
Prefer Poster Session

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