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Three electrode atmospheric pressure plasma jet in helium flow[1] DEJAN MALETIC, NEVENA PUAC, GORDANA MALOVIC, ZORAN LJ. PETROVIC, Institute of Physics, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia — Plasma jets are widely used in various types of applications and lately more and more in the field of plasma medicine. However, it is not only their applicability that distinguishes them from other atmospheric plasma sources, but also the behavior of the plasma. It was shown that plasma plume is not continuous, but discrete set of plasma packages. Here we present iCCD images and current voltage characteristics of a three electrode plasma jet. Our plasma jet has a simple design with body made of glass tube and two transparent electrodes wrapped around it. The additional third metal tip electrode was positioned at 10 and 25 mm in front of the jet nozzle and connected to the same potential as the powered electrode. Power transmitted to the plasma was from 0.5 W to 4.0 W and the helium flow rate was kept constant at 4 slm. For the 10 mm configuration plasma is ignited on the metal tip in the whole period of the excitation signal and in the positive half cycle plasma "bullet" is propagating beyond the metal tip. In contrast to that, for the 25 mm configuration at the tip electrode plasma can be seen only in the minimum and maximum of the excitation signal, and there is no plasma "bullet" formation.

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