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Electrical characteristics of an atmospheric pressure plasma jet with helium flow GORDANA MALOVIC, DEJAN MALETIC, NEVENA PUAC, Institute of Physics Belgrade Serbia, SASA LAZOVIC, ANTONIJE DJORDJEVIC, Faculty of Electrical Engineering Belgrade, ZORAN PETROVIC, Institute of Physics Belgrade Serbia, INSTITUTE OF PHYSICS TEAM, FACULTY OF ELECTRICAL ENGINEERING BELGRADE TEAM — In the last few years atmospheric nonthermal plasma jet increasingly attracts interest because of its potential in biomedical applications. We have constructed a plasma jet that operates in the range of 5-10 kV and 25-150 kHz. It is made of Pyrex glass tube (I.D. 4 mm; O.D. 6 mm) with two cylindrical electrodes made of copper foil (13 mm wide). The buffer gas was helium with a flow of 2-7 slm. High voltage probe was used to obtain voltage waveforms while current waveforms were measured at the resistor (100 kOhm) placed in the grounded branch of the electrical circuit. Measurements are performed for increasing and decreasing applied voltage in order to observe hysteresis. RMS voltage/current values and mean power values are calculated. Our results show that plasma is a nonlinear load in the electrical circuit and that there is a significant hysteresis. It was possible to control the mean power in all cases to be below 10 W which is required for biomedical applications. The electrical measurements are coupled to ICCD measurements of the plasma profile and motion.

Zoran Petrovic
Institute of Physics Belgrade Serbia

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