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Time resolved mass spectrometry of positive ions originated from atmospheric-pressure plasma jet¹ NENAD SELAKOVIC, NEVENA PUAC, DEJAN MALETIC, GORDANA MALOVIC, ZORAN LJ. PETROVIC, Institute of Physics, University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia — We present time-resolved measurements of positive ions originated from the atmospheric pressure plasma jet (APPJ) by using HIDEN HPR60 mass energy analyzer. APPJ was made of Pyrex glass tube with two transparent electrodes (15 mm wide PET foil). The gap between the electrodes was 15 mm, excitation frequency 80 kHz and applied voltage 6-10 kV_{peak-to-peak}. Helium flow rate was kept constant at 4 slm. In all measurements the distance between the plasma source and mass spectrometer orifice was 15 mm. Spectrometer detector gating was synchronized with the applied current and voltage signals in order to track in time the signal of detected ions. The internal gate width of HPR60 analyzer was 0.1 μ s. We performed time resolved mass spectrometry of most abundant ion species originated from plasma jet: $N_2^+(36\%)$, $N^+(20\%), O_2^+(18.5\%), O^+(16.8\%), H_2O^+(6.1\%), OH^+, NO^+, N_2H^+ and Ar^+ (a)$ few percentage). Results have shown that maximum intensity of nitrogen ions is lagging the maximum of current and voltage signal and maximum intensity for oxygen species is in opposite phase with current-voltage signals.

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