

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Physical properties of Plasma Jets Emitted in Pulsed Capillary Discharges.¹ GONZALO AVARIA, HEMAN BHUYAN, MARIO FAVRE, EDMUND WYNDHAM, Pontificia Universidad Catolica de Chile, Departamento de Fisica, Casilla 306, Santiago 22, Chile — Open ends pulsed capillary discharges (PCD) establish natural conditions for the generation of plasma jets. We have investigated the physical properties of the plasma jet emitted in a PCD, operating in a continuous pulsing mode at 10 kV (~ 2 kA, 10 ns), with frequencies up to 50 Hz. The discharge is operated in argon and nitrogen, at pressures in the 0.4—1.0 Torr range. A dual, optoisolated, fast Langmuir probe, placed at the anode side, close to the capillary exit, is used to measure the characteristic electron temperature (T_e) and electron density (N_e) of the plasma jets, with temporal and spatial resolution. Time integrated visible spectroscopy is used to identify the plasma jets components. Characteristic values of T_e and N_e are found to be in the tens of eV and 10^{13} cm⁻³, respectively. Based on these measurements, a comprehensive characterization of the PCD plasma jets will be presented.

¹Funded by FONDECYT grant #1030970.

Mario Favre

Date submitted: 21 Jul 2006

Electronic form version 1.4