

Abstract Submitted
for the GEC08 Meeting of
The American Physical Society

Coupling of imaging and emission spectroscopy for microplasmas studies CLAUDIA LAZZARONI, Ecole Polytechnique, NADER SADEGHI, LSP, Grenoble, France, ANTOINE ROUSSEAU, LPTP, Palaiseau, France — A microplasma is generated in the microhole of a metal-dielectric-metal sandwich at medium pressure in pure argon. The gas pressure ranges from 30 to 300Torr; the hole diameter from 100 to 400 μm . The aim of our experiment is to study the radial dependence of the mechanism of atoms excitation and of the electronic density inside the microhollow cathode discharge. Imaging of the emission from the microplasma is performed with a spatial resolution of $2\mu\text{m}$. The electron density is estimated from the Stark broadening of the H_β -line. The radial distribution of the emission intensities of an Ar atomic line and an Ar^+ ionic line are used for the excitation study. Ar and Ar^+ lines are excited in the cathode sheath edge by beam electrons accelerated within the sheath. These two excitations show the decay of the energy of electrons in negative glow. The Ar line presents also production of excited atoms by recombination of argon ions with electrons at the center of the micro-hole. Work is in progress to evaluate the contribution of the static electric field on the stark broadening.

Claudia Lazzaroni
Ecole Polytechnique

Date submitted: 16 Jul 2008

Electronic form version 1.4