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Investigation of a Micro-Hollow Cathode Discharge stability in different gases XAVIER AUBERT, ANTOINE ROUSSEAU, LPTP-Ecole Polytechnique-Palaiseau France — Micro-hollow cathode discharge (MHCD) are of interest for the plasma generation near atmospheric pressure at a relatively low voltage [1-3]. MHCD are generated in the hole (typically few hundreds of micrometers) made in a conductor-dielectric-conductor sandwich. We report the characterization of such plasmas in argon, helium and air and show that the electrical behaviour is different from air to noble gases. Current/ voltage characteristics performed under various hole diameter and gas pressure show that highly reproducible self pulsing regime exists when the plasma expends towards the backside cathode region. The influence of such a self-pulsing regime on the discharge stability in a multi-hole configuration is also reported. Finally, the possibility of generation of a microplasma in a three electrodes configuration is studied. Production of oxidized species such as nitrogen oxides in air is also reported.

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