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Ignition of parallel Micro Hollow Cathode Discharges in He without ballasts THIERRY DUFOUR, GREMI, University of Orleans, MONALI MANDRA, MATTHEW GOECKNER, UTD, University of Texas at Dallas, PHILIPPE LEFAUCHEUX, PIERRE RANSON, GREMI, University of Orleans, JEONG-BONG LEE, UTD, University of Texas at Dallas, RÉMI DUSSART, GREMI, University of Orleans, LAWRENCE OVERZET, UTD, University of Texas at Dallas — Microplasmas are of interest for many different applications including medical, micro TAS, plasma treatment... The purpose of our study is to switch on and control several microdischarges mounted in parallel on a single chip, without ballasting them individually. Microcavities used in our experiments are Ni:Al_2O_3:Ni sandwich structures. Holes are 80-180 μm diameter. DC microplasmas are created in He gas without flow with a pressure from 200 to 1000 Torr. A maximum power of 7 watts can be injected into one microdischarge. The area of the plasma spread on the cathode side is determined using an ICCD camera. A current density as high as around 10 mA/mm^2 could be evaluated. Abnormal glow regime can be obtained by limiting the cathode surface. By this way, it is possible to switch on all the microplasmas without using individual ballasts. We will also present results of microplasmas ignited in gas flow crossing the cavities and show the flow affects the microplasmas and their V-I curve.

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