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Interaction between a microplasma array and an adjacent dielectric surface[1] SEBASTIAN DZIKOWSKI, VOLKER SCHULZ-VON DER GATHEN, Ruhr-Universitaet Bochum — Microplasma pixel devices are interesting for applications such as surface modification. A representative is the metal grid array, which is a stable alternative to silicon-based arrays and consists of a dielectric, a grounded electrode and a metal grid with symmetrically arranged cavities. Typically, microplasma arrays are operated close to atmospheric pressure with noble gases like argon and helium. By applying a bipolar triangular voltage waveform with an amplitude of 700 V peak-to-peak and a frequency of 10 kHz to the metal grid, the discharge is ignited in the cavities having a diameter of about 200 and depth of 50 m. For future applications, such as coating and catalysis, the interaction between the array and a dielectric surface positioned at close distance (<˜200 m) is of great importance. By application of phase resolved optical emission spectroscopy, the phase dependent expansion of the emission out of the cavities has been observed. Here, we present results of investigations on the dependence of emission structures of the cavities (individually or as group) on pressure, applied voltage and distance between grid and dielectric.

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