Abstract Submitted
for the GEC20 Meeting of
The American Physical Society

Spatial distribution of emission in low pressure DC discharges in water and alcohol vapours[1] JELENA MARJANOVIC, DRAGANA MARIC, GORDANA MALOVIC, Institute of Physics, University of Belgrade, Serbia, ZORAN LJ. PETROVIC, Serbian Academy of Sciences and Arts, Belgrade, Serbia; School of Engineering, University of Ulster, UK — Here we show the spatial distributions of emission in the DC breakdown in water vapour and alcohol vapours, for electrode gaps 1.1 and 3.1 cm. We recorded the 2D side-on distributions of emission using an ICCD camera. For the same *pd*, at different electrode gaps *d*, the anatomy of the discharge changes. The radial discharge width is smaller at larger electrode gaps, as shown for the case of a gap of 3.1 cm, as compared to the gap of 1.1 cm. This difference is most noticeable at low pressures (large E/N).At given electrode diameter to gap ratio the increased diffusional losses at lower pressures will violate *pd* scaling, however, it is interesting that processes induced by heavy particles are more sensitive to changes in geometry of the discharge than electron induced processes. Under the investigated conditions, most of the emission comes from the cathode region due to the heavy-particle excitation. As the electrode gap increases the radial distribution of emission near the cathode becomes significantly narrower than that near the anode. We propose that the smaller radial discharge widths at larger gaps may be due to the change of electric field distribution in the vicinity of the cathode edges, in addition to the diffusion losses of charged particles near the discharge chamber walls. Consequently, processes of excitation and ionization in this region would be less prominent.

[1]Supported by the Serbian MESTD, Projects No. 171037 and 410011

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Date submitted: 12 Jun 2020 Electronic form version 1.4