

Abstract Submitted
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Optical and electrical characteristics of N₂ micro-discharges produced in coplanar surface DBD geometry¹ MILAN SIMEK, VACLAV PRUKNER, JIRI SCHMIDT, Institute of Plasma Physics AS CR, v.v.i., DEPARTMENT OF PULSE PLASMA SYSTEMS TEAM — Basic optical and electrical characteristics of nitrogen micro-discharges generated in an AC surface DBD reactor with coplanar electrode arrangement were studied at atmospheric pressure by means of the ICCD microscopy and spectrometry complemented with the multi-channel photon-counting. Temporal evolutions of N₂-2.PG (second positive), N₂-HIR (Hermann infrared), NO-gamma and N₂⁺-1.NG (first negative) bands induced by an individual H-shaped micro-discharge generated during positive/negative AC half-cycle were acquired and analyzed. Typical emission waveforms were inspected as function of both frequency and amplitude of the modulated AC driving high-voltage, in the case of a) a single micro-discharge produced during an AC half-cycle and b) multiple, equally spaced micro-discharges produced during an AC half-cycle. Observed waveforms and obtained characteristic time constants will be discussed in the frame of electron impact excitation/ionization, N₂(A)+N₂(A) energy pooling and N₂(A)+NO resonant energy transfer processes.

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