

STUDY OF INTERMITTENT CORONA DISCHARG USING ICCD CAMERA *

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Corona discharge is widely used in electrostatic precipitators, plasma-chemical systems for ozone synthesis and surface treatment, aerosol charging systems, and many other applications. Corona discharge can also be a negative factor, for example, in high-voltage gas insulation systems. Therefore, the research of the one is still relevant.

We have studied an intermittent corona discharge in atmospheric air at various voltages. Two electrode configurations were used to ignite the corona discharge: a single point and a point-plane. The discharge was photographed with an HSFC-PRO ICCD camera. Waveforms of the discharge current and voltage across the gap were recorded. We also studied the first current pulses that occur when a corona discharge was ignited when a gradual voltage increase at the potential electrode.

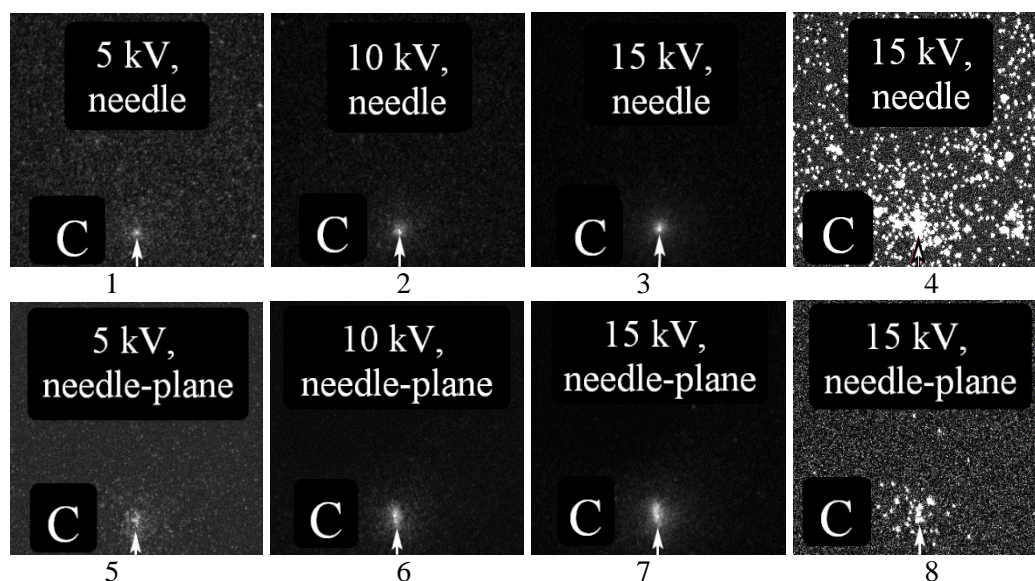


Fig.1. Photographs of the light emission of the negative corona discharge around a single point (1 – 4) and in the point-plane gap with $d = 2$ cm (5 – 8) in the atmospheric air, obtained by ICCD camera. The exposure time of one frame is 10 ms (1, 2, 3), 50 μ s (4), 500 μ s (5, 6, 7) and 1 μ s (6). The radius of curvature of the needlepoint is 24 μ m.

* The work was supported by the Russian Science Foundation, project #22-29-00137.