

Electrohydrodynamic phenomena in discharges over liquid and dispersed electrodes

V. L. Bychkov, D. E. Sorokovykh, P. A. Goryachkin, D. V. Bychkov and V. A. Chernikov

Physical Department of Lomonosov Moscow State University
Bld. 2, 1 Leninskie Gory, Moscow, 119991, Russia
E-mail: bychvl@gmail.com

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The paper presents data on experiments with discharges over liquids such as water, alcohol, glycerin and their mixtures. Discharges developed under the upper electrode in the form of a needle, or a set of needles. A cuvette filled with a substance was used as the lower electrode, to which grounding was applied. In all cases, a funnel or waves appear in the liquid under the upper electrode on the surface of the substance, which indicates the influence of the ion wind on the surface layer. In the case of mixtures of distilled water, alcohol, alcohol with water and alcohol with glycerin, jets and fountains appear on the surface of the liquid under the upper electrode, in the case of kerosene, waves along its surface and bubbles inside the liquid. The appearance of jets and their destruction into droplets reflect the development of hydrodynamic phenomena over charged liquids. With the help of a thermal imager, measurements of the surface temperature of the liquid were carried out. A qualitative interpretation of the results is given.

Keywords: corona discharge, liquid electrodes, water, alcohol, electrohydrodynamic phenomena, ion wind, columns, plasma.

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