EFFECT OF CORONA DISCHARGE PLASMA ON DISPERSED MATERIALS AND LIQUID ELECTRODES [[1]](#footnote-1)\*)

DOI: 10.34854/ICPAF.2022.49.1.136

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Interest in the effect of corona discharge plasma in air on the surface of various dielectric materials is of practical nature. It is connected with the study of the behavior of particles on the surface of the Earth under various conditions under the action of an electric field in thunderstorms, and in the field of action of various devices for transporting electrical energy. Such studies are also of interest for solving environmental problems of disinfection of liquids and powders, changes in their conductivity, chemical composition, generation of active particles in liquids and in near-surface layers of dispersed materials, dispersion of powders by electric discharges, in plasma chemistry, as well as activation of fuels. In recent years, interest in such studies has been manifested in connection with the problems of creating a soil in extreme habitats, in missions to Mars, etc.

A fundamental issue is the possibility of the appearance of structures on the surface of a liquid or dispersed material under the action of an electric discharge field in experiments with a corona discharge over poorly conducting - dielectric liquids and dispersed materials, namely: alcohol, glycerol, butyl glycol and clay. In this case, the surface of the liquid or dispersed material serves as an electrode, while the other electrode is located above the surface and serves as a plasma source. We observed the appearance of jets, pillars and fountains in the case of liquids, pillars and balls in the case of clay, in the absence of the appearance of structures in the case of SiO2.

The appearance of structures is associated with the development of pondermotive forces and hydrodynamic instabilities above the surface of the lower electrode covered with liquid or dispersed material.

We also investigated the effect of corona discharge plasma on the surface of winter wheat and barley grain in order to reduce the number of harmful fungi on their surface. Depending on the type of fungus, the plasma reduces from a few percent to zero, depending on the intensity of the discharge and the processing time of the grain.

This effect opens up the new method of reducing the amount of environmentally harmful dressing agents when processing Grain.

1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLIX/Pt/ru/HD-Bychkov.docx) [↑](#footnote-ref-1)