RESEARCH ON THE INFLUENCE OF NON-EQUILIBRIUM LOW-TEMPERATURE PLASMA ON DISTILLED WATER

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The processes occurring in aqueous solutions under the influence of non-equilibrium low-temperature plasma are conventionally divided into electrochemical and plasma-chemical ones. Considering that the traditional electrochemical system consists of a chain of sequentially connected conductors of the first and second kind, the system under consideration, which includes an electrical discharge in gases, cannot be defined as a classical electrochemical one, since the gaseous environment, as already shown, has mixed electronic and ionic conductivity, and many fundamental laws of electrochemistry cannot be fully applied to it, especially at the liquid/gas interface. In the case where a layer of liquid is present between the cathode and the anode, in addition to the gas phase, the system contains a conductor of the first kind (metal), a conductor of the second kind (aqueous solution), and a mixed conductor (gas phase). Earlier, physico-chemical transformations in water under the influence of contact non-equilibrium low-temperature plasma were investigated by voltammetry, IR spectroscopy, and spectroscopy [1].

The dependence of the change in the concentration of peroxide compounds on the exposure time of non-equilibrium low-temperature plasma on distilled water was studied in the work (Table 1).

Table 1. Dependence of the change in peroxide compound concentration on the exposure time of non-equilibrium low-temperature plasma on distilled water

The concentration, mMol/dm ^{3}	Time, s
1	80
2,5	200
3,5	300
4,8	450
5,5	500
6	600
7	800
7,5	900
7,6	1000
7,7	1100
7,8	1200
7,8	1300

From the obtained data, it can be concluded that the maximum concentration of peroxide compounds is achieved when non-equilibrium low-temperature plasma affects distilled water, with its value almost doubling the indicators obtained during processing of aqueous solutions in a glowing discharge. Since the concentration of peroxide compounds decreases with increasing salt content in the solution, it can be assumed that they participate in certain stages of the formation or catalytic decomposition of hydrogen polyoxides.

Literature

1. Pivovarov, A. A. The Influence of Lower Alcohols Additives on the Properties of Aqueous Solutions Treated by Electrical Discharges / A. A. Pivovarov, O. V. Sergeyeva, S. V. Sitnik // Issues of Chemistry and Chemical Technology.2001. № 5. С. 74 – 78.