GAS CHROMATOGRAPHIC ANALYSIS OF A COLD PLASMA JET GENERATED ON A BASIS OF AN ELECTRODE MICROWAVE DISCHARGE IN ARGON FLOW BEING INTERACTED WITH ATMOSPHERIC AIR

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During the last years there has been an increased interest in cold plasma jets based on atmospheric pressure discharges. It is due to the fact that excited particles and radicals with a high reactivity are formed in such jets, and the jets themselves do not have a destructive effect on the material during plasma-chemical treatment. That is why cold plasma jets find application in technologies for plasma surface modification of non-heat-resistant materials, such as, for example, organic and inorganic polymers. The multipurpose microwave plasmatron previously developed and manufactured allows generating atmospheric pressure cold plasma jets using an external electrode plasma torch with a wide outlet of 2.5 cm in diameter [1]. The plasmatron operates at a frequency of 2.45 GHz and has a torch power of up to several hundred watts. In this work, we implemented a technique for gas chromatographic analysis of the cold plasma jet, which generates behind the outlet of the torch on the basis of an electrode microwave discharge in argon flow being interacted with atmospheric air. For the analysis of gaseous samples, the chromatographic gas complex "Chromos GKh-1000" was used. Argon (99.993%) was supplied to the torch at a flow rate of 7.5 liters per minute. It was found that at the microwave discharge burning an intensified admixture of atmospheric air to the discharge zone occurs. This effect leads to the formation of new gaseous products such as H_2 and CO.

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