

# Plasma-chemical synthesis of nitro derivatives of aromatic compounds using a high-frequency electrodeless discharge

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A new method of nitration of aromatic hydrocarbons was carried out during plasma chemical treatment by excitation of a capacitive high-frequency electrodeless discharge. The following substances were taken as objects of research: benzene, toluene and benzyl alcohol. A series of experiments on nitration of aromatic compounds initiated by plasma chemical treatment under varying conditions were carried out at a laboratory installation of plasma chemical liquid treatment. The laboratory installation consisted of: a 10 ml reactor, a reverse refrigerator, a vacuum pump and a high voltage source. Nitration reactions were carried out in water with the addition of glacial acetic and nitric acids. In the course of this work, the products of nitration reactions of benzene, toluene and benzyl alcohol were determined. As a result of the nitration reaction of benzene, two products are formed—nitrobenzene and m-dinitrobenzene. Nitration of benzyl alcohol leads to the formation of 4-nitrobenzyl alcohol and 4-nitrobenzaldehyde. Analysis of the toluene nitration reaction revealed 2 reaction products: 2-nitrotoluene and 4-nitrotoluene. The study was supported by a grant from the Russian Science Foundation (project No. 21-79-30062).