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A new variant for the reduction of aromatic compounds until 2,5-dihydro derivatives by metal-alkylamine(ammonia)-aliphatic alcohol

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Abstract

Development of methods for the preparation of aromatic hydrocarbons from aromatic compounds of di- and tetrahydro-derivatives, limiting and unsaturated alcohols and ketones of the mentane structure, further study of the reactions of the compounds obtained in the reactions of hydrohalogenation, halogenation, cationoid and anionoid transformations makes an important contribution to the chemistry of carbocyclic compounds and, first of all, to the chemistry of compounds series of Mentan. The cyclohexane compounds obtained from substituted benzene with two located at the 1,4-position, which differ markedly in reactivity by double bonds, can be used in the synthesis of hormones, prostaglandins, polyfunctional compounds with a wide range of biological effects. The compounds obtained can also be of interest for conformational analysis and dynamic stereochemistry of disubstituted cyclohexane. In connection with this, a new version of the reduction of aromatic compounds to 2,5-dihydro derivatives by metal-alkylamine (ammonia) – aliphatic alcohol systems is presented in this article. To restore various functional derivatives of benzene, a fundamentally new ratio of reagents in the reduction system (mole) is proposed: an aromatic compound : a metal : an aliphatic alcohol : an aliphatic amine (ammonia) 1 : 2-6 : 4-12 : 0.25-0.5. The recovery time of 1 mole of the initial arena is not more than 1 hour, the process temperature is 80-95 °C when converted to reaction products of 85-95%. The content of the reaction products of 2,5-dihydro derivatives is 50-80%, depending on the structure of the original arene. The proposed system is simpler in technological design than the known methods and lacks their main disadvantages: low temperature processes and use of no less than 20-30 moles of toxic, expensive amines per 1 mole arena or up to 200 moles of liquid ammonia (Birch method), or in its modification (the version of Wildes and Nelson) – addition of co-solvents.

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