GAS-CHROMATOGRAPHIC RESEARCH PRODUCTS OF OXIDIZING CONDENSATION REACTION OF METHANE

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Working the catalyst out on the basis of local raw material for heterogen-catalytic oxidation of methane from the point of view of providing the need of the Republic of Uzbekistan with ethylene is actual. The success of working catalysts out and estimation of their characteristics are connected to the analysis of synthesis products. In the work the results of gas-chromatographic research of products of oxidizing condensation of methane at the presence of various catalysts and at a variation of the synthesis parameters are presented. With the purpose to develop gas-chromatographic method of the analysis of products of oxidizing dimerization of methane we have investigated separation abilities of a number of stationary liquid phases and solid sorbents. The experiments have been carried out on chromatograph "LChM-80" with detector on heat-conductivity. To reveal the separation conditions of the reaction products the special attention is given to the selection of a stationary liquid phase. In selection of stationary liquid phases we have investigated separation abilities of some phases. The research of phases have been carried out in identical conditions of the analysis. The carried out experiments have shown, that none of 8 investigated liquid phases have supplied desirable separation. At study of the separation ability of a number of solid sorbents the best separation was obtained on solid sorbents - activated coal. The experiments on revealing optimal conditions of the analysis were carried out on this adsorbent. The optimization of the separation process of products of synthesis of ethylene was carried out by the variation of temperature of the column thermostat, the speeds of flow of gas - carrier - nitrogen, the column length using separation degree of the neighbouring peaks as a critical parameter. On the basis of the composed model by the method of step regress the optimal separation condition: the temperature of column thermostat - 100°C, the speed of a flow of the gas - carrier (nitrogen) - 35 ml/minutes, the column length 1 m with an internal diameter of 3 mm has been revealed. The qualitative analysis of the reaction products has been carried out by the method of "witnesses" and on the basis of structure - group forming. The quantitative results obtained by the method of absolute calibration are used to study kinetic laws of the reaction. The reaction speed constants; the selectivity of catalysts are evaluated. The kinetic area of the realization of the reaction; the optimal conditions of the synthesis are established.