S6A-P031 SYNTHESIS OF VALUABLE PRODUCTS FROM NATURAL GASES

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The reaction of oxidative condensation of methane to C_2-hydrocarbons (C_2-HC) is the most rapidly developing among the various pathways of methane oxidation. The yield and selectivity of formation of ethylene increases with the ratio of CH_4 : O_2 from 1 : 1 to (1.5-30) : 1. The composition of mixture (mol: CH_4 – 0,0018-0,0031, O_2 – 0,0013, inert gas – 0,008-0,004) is optimal for synthesis of ethylene from methane of natural gas. Implementation of oxidative condensation of methane process on polyoxide systems in installations with one or two reactors as well as on polyoxide catalysts of the complex composition allowed to increase the conversion of methane to 46,0%, the yield of ethylene - up to 18,5% at total yield by C_2-HC to 22,0%. The optimal model of industrial reactor was offered. Analysis of results showed that the use of industrial-scale multi-shelf (5-7 layers) adiabatic reactor is the best. The problem of selective production of formaldehyde from methane is less studied. Catalysts based on 12 series Mo heteropoly compounds supported on different carriers were investigated in the process of partial oxidation of methane to formaldehyde (POMF) in different conditions. The highest yields of CH_2O were obtained on low-percentage catalysts (1-2,3%). The formation of structures of interaction "fragment of heteropoly acid (HPA)-carrier" is due to the finely dispersed distribution of HPA on carrier in the low-percentage catalysts.

Keywords: natural gas, ethylene, formaldehyde

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