**Catalytic conversion of biogas to synthesis gas**

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Extensive resources, high margin industries make biogas most promising source of hydrocarbons, capable of providing current and future needs of mankind in the energy and hydrocarbon feedstock.Biogas composition depends on the process parameters and composition of feed grade. The main components of biogas produced in anaerobic bioreactors are methane (CH4) and carbon dioxide (CO2), as impurities may be hydrogen sulfide (H2S), ammonia (NH3), hydrogen (H2), nitrogen (N2), carbon monoxide (CO) and oxygen (O2). Biogas produced thus may be converted intosynthesis gas by dry reforming (CH4 + CO2), or steam reforming (CH4 + H2O) using appropriate catalysts.

The relevance of this work is due to the involvement of methane and carbon dioxide - two greenhouse gases into the process of producing synthesis gas. The synthesis gas is, in turn, the raw material for a number of commercial products by industrially-applicable GTL-Technology. Thus, biogas is one of the most promising renewable fuels.

In the present work as catalysts of dry reforming of methane was investigated modified nickel catalyst supported on alumina.

Experiments to test the effectivity of the catalysts were carried out on an automated flow catalytic unit (PKU-1).The reaction products were identified by chromatography on device "Chromos GH-1000" using an absolute calibration method and a thermal conductivity detector.

As a result of investigationsynthesized a new nickel-molybdenum catalyst. The catalytic activity of polyoxide3% NiO - 1% MoO3 / Al2O3 catalyst in a carbon dioxide reforming of methane was testedover a wide range of variation of the process parameters. It was defined optimal process conditions (temperature, space velocity of the reaction and the ratio of the reactants in the initial reaction mixture) for the production of synthesis gas in the carbon dioxide reforming of methane. Over the efficient 3% NiO - 1% MoO3 / Al2O3 catalyst at optimum process parameters (T = 850° C, W = 1000 h-1, and CH4: CO2 = 1: 1), the methane conversion was 98%. Under these conditions is obtained synthesis gas with a ratio of 1: 1.