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## Reforming of methane with carbon dioxide

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The reaction of carbon dioxide reforming of methane (CRM) is one of the ways that allows to convert natural gas - methane into valuable end products, representing a gas mixture of hydrogen and carbon monoxide in various proportions. This process is endothermic and therefore its implementation requires energy input. From this viewpoint, it is more secure, unlike the partial oxidation of methane with oxygen and steam-oxygen air conversion. Conducting of CRM also has ecological significance, since allows to consume a combination of two greenhouse gas - methane and carbon dioxide. The process of carbon dioxide reforming of methane has not yet been widely adopted in the industry, since the main problem is the carbonization of catalyst. The main efforts in the art directed to the development of active catalysts. In the present work as a catalyst for carbon dioxide reforming of methane was investigated catalyst NiCuNdMo/20%Al<sub>2</sub>O<sub>3</sub>/HZSM-5.

The results showed that the most favorable ratio for the process CRM is stoichiometric, at which the maximum yields of the reaction products and the highest conversion of the starting reagents. The optimum conditions of the process are: the ratio CH<sub>4</sub>/CO<sub>2</sub>-1, T - 850°C, W-3600 h-1 at the concentration of hydrogen formed about 48.9%, carbon monoxide 50.9%, conversion of methane-92.6% and carbon dioxide-93.2%. It was determined that in the temperature range 650-900°C is observed equilibrium yield of CO and H<sub>2</sub>.

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