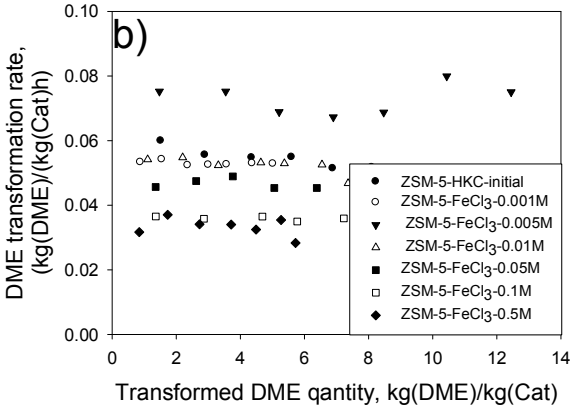

METHANOL TO HYDROCARBONS TRANSFORMATION OVER MODIFIED ZEOLITES

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ıthesis and the transport sector of the economy is based on hydrocarbons extracted from oil. The forecast of the international energy agency [1] for the next 25 years includes an increase in ɜ in extraction by 10-15%. Consequently, significant changes and revisions of the raw materials base for hydrocarbon production processes are necessary for the possible replacement of traditional Biomass and waste is the only renewable alternative to fossil sources of hydrocarbons and energy in chemical synthesis and the transport sector of the economy. The production of liquid hydrocarbons from biomass and waste through synthesis gas is considered as a promising process in the short and medium term, either by Fischer-Tropsch synthesis, or by means of the catalytic transformation of methanol into hydrocarbons [2, 3].

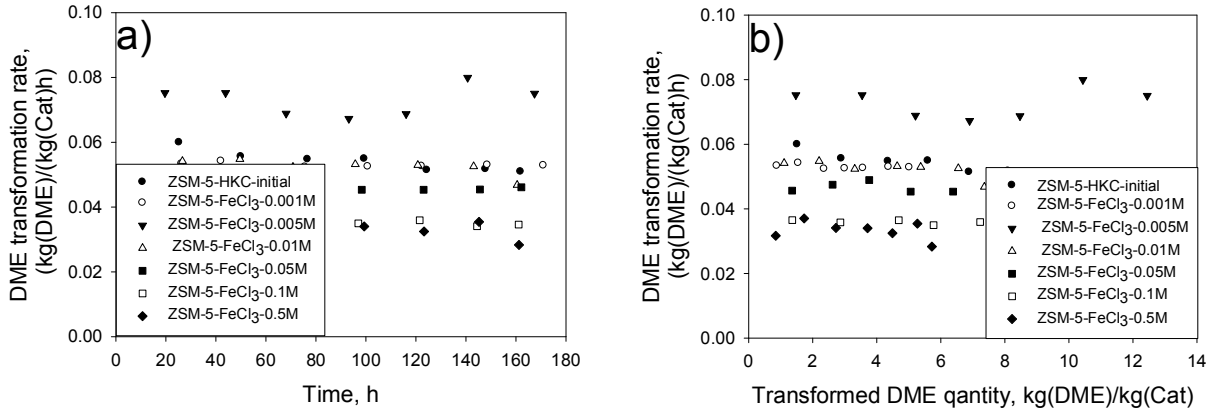

Figure 1. Dimethyl ether transformation rate versus а) time, б) specific transformed dimethyl ether quantity for H-ZSM-5 samples modified with iron chloride, ($W(CH_3OCH_3)$=0.16 kg(Me)/(kg(Cat)*h), t=350 °C, p=1.1 atm)

Samples of an iron-modified commercial zeolite H-ZSM-5 were synthesized by modification of H-ZSM-5 in a solution of Iron chloride(III), the samples were designated ZSM-5-$FeCl_3$-0.001M, ZSM-5-$FeCl_3$-0.005M, ZSM- 5-$FeCl_3$-0.01M, ZSM-5-$FeCl_3$-0.05M, ZSM-5-$FeCl_3$-0.1M, ZSM-5-$FeCl_3$-0.5M. Catalysts testing were provided in tube reactor filled with investigated catalysts, the reactor was heated to 350^{0}C the DME low rate was maintained as 0.16 kg(DME)/(kg(Cat)*h). The reaction samples were analyzed by online chromatography.

The introduction of iron into the zeolite H-ZSM-5 matrix reduces the number of micropores from 303 to 190 m^2/g, while the surface area of mesopores increases slightly from 55 to 106 m^2/ g with increasing of iron concentration from 0.004% to 0.032% and with further increase of concentration to 0.24% decreases to 45 m^2/ g.

Modification of zeolite H-ZSM-5 with iron chloride, results in increase of dimethyl ether for 25-30%. The increase in the conversion of dimethyl ether and the rate of its transformation with iron modification can be associated with modification of active sites.

Acknowledgements
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