

ISOMERIZATION OF LIMONENE ON ZEOLITE-CONTAINING CATALYSTS BASED ON KAOLIN

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Abstract. The aim of the work was to study the isomerization of limonene on zeolite-containing biporous acid catalysts based on kaolin. Zeolite catalysts were synthesized from Ukrainian kaolin. Catalysts were studied by using XRD, XRF, DTA/TG, IR-spectroscopy, low-temperature nitrogen adsorption, and pyridine sorption. Micro-mesoporous materials isomerize limonene at 160°C. The main product on acid catalysts was terpinolene, while the original metakaolin microsphere catalyzes mainly the limonene condensation. The maximum yield of isomers is 60–65% at 80–90% conversion. It was found that the studied samples do not have a significant accumulation of carbonaceous deposits because limonene has high solubility, which helps to remove intermediate products of transformation from the surface of the samples.

Keywords: kaolin, zeolite, limonene isomerization, terpinolene yield.