Catalytic activity of Ir/USY for selective ring opening of MCP and MCH

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The selective ring opening (SRO) of alicyclic compounds like methylcyclohexane (MCH) and methylcyclopentane (MCP) attracts the interests of researchers because of increasing demand of transportation fuel, which can maintain high cetane number and low aromatic content. In the present paper Iridium catalyst supported on USY zeolite was used for SRO of MCP and MCH. Experiment were conducted in batch type as well as continuos fixed bed reactor at [Temperature = 300oC, hydrogen pressure = 30 bar, Time = 1~5 hr, WHSV = 1.8 h-1, H2/HC=40]. The catalyst was prepared by impregnation method and their surface characteristics were evaluated by H2-TPR, XRD, TPD and BET. The reaction products were analyzed with GC-MS. In both cases MCH first undergoes isomerization and ring contraction to form dimethylcyclopentanes and ethylcyclopentane as primary products but in the case of MCP ring opening resulted in formation of n-hexane, 2-methylpentane and 3-methylpentane as well as the light ends C1-C5 hydrocarbons.