

Selective Ring Opening of MCH over Ir/HZSM-5 Catalyst

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The selective ring opening(SRO) of alicyclic compounds 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 HZSM-5 zeolite was used for SRO of methylcyclohexane. Experiments were conducted in fixed bed reactor at temperature of 300°C, hydrogen pressure of 30 bar, with 1.8 h⁻¹WHSV and H₂/HC=40, using 0.5 g of catalyst. Effect on conversion, yield and selectivity was evaluated. The catalyst was prepared by impregnation method and its surface characteristics were evaluated by H₂-TPR, XRD, TPD, HR-TEM and BET. The reaction products were analyzed with GC equipped with a FID detector and identification of GC peaks was accomplished by GC-MS analysis. Ring opening pathway of MCH on bifunctional catalysts, shows primary products are a mixture of dimethylcyclopentanes and ethylcyclopentane formed by ring contraction of MCH, primary products undergo RO reactions with formation of n-heptanes and isohexanes, further they react to form cracking products. The selectivity and distribution of products from RC and RO reactions are strongly affected by the acidity of zeolites.