

### Selective ring opening of methylcyclopentane over Ni/SiO<sub>2</sub>

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The selective ring opening of methylcyclopentane (MCP) catalyzed by 60 wt.% Ni/SiO<sub>2</sub> has been studied, in the context of the removal of polynuclear aromatics from diesel fuel. The catalyst was prepared by co-precipitation method and their surface characteristics were evaluated by H<sub>2</sub>-TPR, XRD, NH<sub>3</sub>-TPD, BET and TEM. The MCP ring opening studies were carried out in a fixed-bed reactor at conditions of T=250 oC, P=10 bar, WHSV=1.8h<sup>-1</sup> and molar ratio of H<sub>2</sub>/feed=40. The reaction products were analyzed with GC and identification of GC peaks was accomplished by GC-MS analysis. The RO reaction of MCP produces n-hexane (n-C<sub>6</sub>), 2-methylpentane (2-MP) and 3-methyl pentane (3-MP) as ring opening products, cyclohexane and benzene was ring enlargement products and with excessive hydrogenolysis, MCP broken into C<sub>1</sub>-C<sub>5</sub> fragments as a cracking products. Ni/SiO<sub>2</sub> catalyst prepared by co-precipitation method showed an unprecedented high catalytic performance with conversion 58.6% and 81% of ring opening products selectivity.