

A study on the acidity effect of bifunctional NiW/zeolite catalyst for selective ring opening of 1-methylnaphthalene in heavy oil upgrading

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Heavy oil, produced from oil refineries and petrochemical plants, has been used as low-value fuel. Due to strict environmental regulations and prediction of high oil prices, heavy oil upgrading has attracted interest to many researchers. Poly aromatic hydrocarbons are the major components of the heavy oil. Selective ring opening (SRO) of naphthenic molecules should be a potential route for the production of valuable compounds such as benzene, toluene, ethyl-benzene, and xylene (BTEX) from the heavy oil. Bifunctional catalyst (metallic and acidic functions) is required in the SRO of naphthenic molecules. In this study, the bifunctional catalysts were prepared using zeolites for the acidic function and NiW for the metallic function. The SRO of 1-methylnaphthalene has been investigated using the bifunctional NiW/zeolite catalysts with different acidity in fixed bed reaction system.