

A Study on the Selective Ring Opening of 1-Methylnaphthalene over P-promoted W/beta Zeolite Catalysts

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Despite global issues over the consumption of fossil fuels, crude oil continues to be a considerable source of energy. However, due to strict environmental regulations and depletion of light crude oil, heavy oil upgrading process has attracted significant attention. The heavy oil contains a large quantity of heavy molecules, multi-ring aromatics, and asphaltenes. The selective ring opening of naphthenic rings is a promising route for heavy oil upgrading and it has been studied by many researchers. In this study, we prepared bi-functional catalysts using P-promoted tungsten with various P mole ratios for metallic function and with beta zeolite for acidic function. 1-methylnaphthalene was selected as a model compound for multi-ring aromatics in heavy oil, and its selective ring opening reaction has been investigated using the prepared bi-functional catalysts in fixed bed reactor system.