

Structure and activity of Ni<sub>2</sub>P/β catalysts for hydrocracking of 1-methyl-naphthalene to benzene, toluene, and xylene

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Catalytic activities of Ni<sub>2</sub>P/β catalysts were investigated for the hydrocracking of 1-methyl naphthalene (1-MN) polycyclic aromatics at 653K-673K and 6.0MPa, LHSV's 1.0 h<sup>-1</sup> with varying H<sub>2</sub> flowrate in a continuous fixed bed reactor. The structural properties of the catalysts were characterized by N<sub>2</sub> physisorption, X-ray diffraction (XRD), and X-ray absorption spectroscopy, which confirmed the formation of Ni<sub>2</sub>P phase on the support. The hydrocracking catalytic activities were compared in the presence of dimethyl disulfide and indole as respective S and N model compounds in the feed. It was demonstrated that the Ni<sub>2</sub>P catalysts show an excellent hydrocracking activity over 99% conversion of 1-MN and 44.2% yield of BTX.