

Synthesis, characterization and activity of zeolite based hydrocracking catalysts.

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Abstract

β -Zeolite and USY-zeolite were used to prep. two sep. series of zeolite-based hydrocracking catalysts. Nickel and tungsten were added using incipient wetness impregnation method on alumina CP100, and then mixed with β -zeolite to form first series of the catalysts. The difference in the mode of addn. of the metal pair resulted in a variety of catalysts that encompassed several possible permutations. In the second series of the catalysts, Ni and W were simultaneously loaded on extrudates made from a mixt. of USY zeolite and alumina AP-1. The prepd. catalysts were characterized for their surface area, pore vol., reducibility and acidity characteristics. The objective of this study was to investigate the differences in the properties and cracking activity of β -zeolite and USY-zeolite based catalysts. The hydrocracking activity of all the prepd. catalysts was measured using hydrotreated vacuum gas oil (HT-VGO) as feed in a batch autoclave reactor. Hydrocracking activity of one of the catalysts contg. β -zeolite was in comparison to a com. hydrocracking catalyst. Catalysts from both series showed promising results for HT-VGO hydrocracking in the batch reactor.