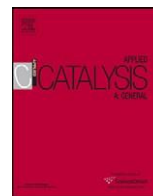




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Inhibition of the hydrogenation of tetralin by nitrogen and sulfur compounds over Ir/SBA-16

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INFOABSTRACT

In this work we study the catalytic properties of 5 wt.% Ir-containing SBA-16 catalysts (with and without aluminum as heteroatom), in the hydrogenation of tetralin to decalin, in the presence of 100 ppm of N as quinoline, indole and carbazole, and 100 ppm of S as dibenzothiophene and 4,6-dimethyldibenzothiophene at 250 °C and 15 atm of pressure of hydrogen, using a Parr reactor. Ir/SBA-16 and Ir/Al-SBA-16 were prepared by wetness impregnation using Iridium Acetylacetonate as source of Ir. The Ir/SBA-16 catalyst synthesized by us had high activity measured in tetralin hydrogenation at mild conditions. The experimental data was quantitatively represented by a modified Langmuir–Hinshelwood type rate equation, using the apparent adsorption constants calculated from the inhibition results for the individual compounds. The catalyst showed a good resistance to sulfur and nitrogen compounds. The inhibiting effect increased in the order: DBT < quinoline < 4,6-dimethyl-DBT < indole < carbazole. The inhibiting effect of the nitrogen/sulfur compounds was strong, but the activity was still higher than with commercial NiMo/alumina catalyst.

We present in this contribution a successfully developed, high loaded and well dispersed Ir/SBA-16 catalysts, that have been shown to maintain a useful catalytic activity, even in the presence of relatively high amounts of sulfur compounds (up to 100 ppm, sulfur basis). Consequently, economically successful processes have evolved, based on this class of catalysts.

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