SYNTESIS, CHARACTERIZATION AND HYDROTREATING CATALITIC PERFORMANCE OF Ir/Ti-SBA-16 AND Ir/TiO_2-SBA-16.

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A series of Ti modified SBA-16 supports and their respective Ir-catalysts were prepared, and characterized to study the effect of support preparation method on the dispersion of iridium and on the characteristics of Ir surface species, with the main aim of obtaining Nitrogen-tolerant catalysts to be used in second stage processes of mild-hydrotreating. Two methods of titania incorporation were tested: the sol-gel method in order to obtain Ti as heteroatom and incipient wetness impregnation to obtain Ti as TiO_2 (anatase phase). The final catalyst was characterized at different stage of preparation by XRD, EDX, TEM, elemental analysis and BET, arriving at the good proportion of Ir^0. The presence of Ti as Ti^{+4} in the nanostructure of SBA and as TiO_2 (anatase phase) was analyzed by UV-vis-DRS and Raman spectroscopy. The average metal particle size indicates that the Ir particle size is lower when we used Ti-SBA-16 than anatase/SBA-16. We study the catalytic properties of 1 wt% Ir-containing SBA-16 materials modified with Ti as heteroatom and impregnated with TiO_2 (anatase phase), in the hydrogenation of tetralin to decalin in the presence of 100 ppm of N as quinoline at 250°C and 15 atm of pressure of hydrogen, using a Parr reactor. The catalysts synthesized by us had good activity measured in tetralin hydrogenation under mild conditions. The experimental data was quantitatively represented by a modified Langmuir-Hinshelwood type rate equation. The preliminary results show these materials as promising catalysts for HDT and HDN reactions.

Keywords: Iridium containing SBA-16; Titanium modified SBA-16; Ti incorporation method; Hydrogenation; Reaction Kinetic.

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