

Title: Pt/carbon materials as bi-functional catalysts for n-decane hydroisomerization

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Abstract: The activity and selectivity of bi-functional carbon-supported platinum catalysts for the hydroisomerization of n-alkanes have been studied. The influence of the properties of the carbon support on the performance of the catalysts were investigated by incorporating the metallic function on a series of carbons with varied porosity (microporous: GL-50 from Norit, and mesoporous: CMK-3) and surface chemistry (modified by wet oxidation). The characterization results achieved with H-2 chemisorption and TEM showed differences in surface metal concentrations and metal-support interactions depending on the support composition. The highest metal dispersion was achieved after oxidation of the carbon matrix in concentrated nitric acid, suggesting that the presence of surface functional sites distributed in inner and outer surface favors a homogeneous metal distribution. On the other hand, the higher hydrogenating activity of the catalysts prepared with the mesoporous carbon pointed out that a fast molecular traffic inside the pores plays an important role in the catalysts performance. For n-decane hydroisomerization of long chain n-alkanes, higher activities were obtained for the catalysts with an optimized acidity and metal dispersion along with adequate porosity, pointing out the importance of the support properties in the performance of the catalysts. (C) 2012 Elsevier Inc. All rights reserved.

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