

Short time synthesis of titania modified-CMK-3 carbon mesostructure as support for Ir-catalyst applied in catalytic hydrotreating



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ABSTRACT

Ti-CMK-3 carbon mesoporous was prepared using a novel synthesis method. This new method avoids the hard template synthesis used commonly. The method developed here, allows to reduce time, energy consumption and cost. Structural and textural characterization of the titanium modified-mesoporous carbon was performed by N_2

adsorption, XRD, UV-vis-DRS, Raman spectroscopy and TEM. The characterization results indicated that the textural and structural properties of the material synthesized by the short time method are comparable with the properties of the material prepared by the hard template method. Ti modified-mesoporous carbon was used as support of the iridium nanoparticles, in order to prepare a catalyst to be tested in model hydrotreating reactions. The catalyst obtained by wet impregnation with iridium acetylacetonate were characterized by ICP-AES, H_2 chemisorption, TEM, XPS and FTIR of adsorbed pyridine. The high Ir dispersion and small particle size, along with the moderate Lewis acidity generated by the presence of titanium in the support, were responsible for the good performance and stability of the catalyst in the hydrogenation of tetralin in presence of nitrogen compounds.

Main advantage of the present study is the reduction of time and cost in the synthesis of the new material and the applicability for HDT reactions.

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