

عنوان مقاله:

Effect of operational conditions on the catalytic performance of Co-Mn/TiO₂ nano catalyst for light olefins production

محل انتشار:

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خلاصه مقاله:

The catalyst containing 30wt.%(Co-Mn)/TiO₂ nano catalysts were prepared by sol-gel method. The activity and selectivity of optimal catalyst were studied in different operational conditions. The results showed that the best operational conditions were the H₂/CO=1/1 molar feed ratio at 250°C and GHSV=1300 h⁻¹ under atmospheric pressure. The selectivity to ethylene decreased with increasing reaction temperature and reaction pressure. The catalyst was found to be superior catalyst in terms of better C₂-C₄ selectivity in the Fischer-Tropsch synthesis (FTS) products and higher olefin/paraffin ratio (2.66) because of the facile formation of cobalt carbide during FTS reaction. The reaction conditions strongly influenced on the performance of the catalyst, and the product selectivity is changed markedly with the variation of GHSV in reaction atmosphere, particularly for light olefins. In addition, methane formation by using this catalyst was suppressed, which this caused decreasing of methane selectivity from 12.3 to 7.4%. Characterization of catalyst was carried out by using X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), N₂ adsorption-desorption measurements methods.

کلمات کلیدی:

Sol-gel, Fisher-Tropsch synthesis, Light olefins, Operational condition

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