

Influence of MgO Physically Mixed with Tungsten Oxide Supported Silica Catalyst on Coke Formation

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Abstract : The effect of additional magnesium oxide (MgO) was investigated by using the tungsten oxide supported on silica catalyst (WO_x/SiO₂) physically mixed with MgO in a weight ratio 1:1. The both fresh and spent catalysts were characterized by FT-Raman spectrometer, UV-Vis spectrometer, X-Ray diffraction (XRD), and temperature programmed oxidation (TPO). The results indicated that the additional MgO could enhance the conversion of trans-2-butene due to isomerization reaction. However, adding MgO would increase the amount of coke deposit on the WO_x/SiO₂ catalyst. The TPO profile presents two peaks when the WO_x/SiO₂ catalyst was physically mixed with MgO. The further peak was suggested to be coming from the coke precursor that could be produced by isomerization reaction of the undesired product. Then, the occurred coke precursor could deposit and form coke on the acid catalyst.

Keywords : coke formation, metathesis, magnesium oxide, physically mix

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