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Effect of N2 Pretreatment on the Properties of Tungsten Based Catalysts in Metathesis of Ethylene and 2-Butene

Authors : Kriangkrai Aranyarat

Abstract : The effect of N2 pretreatment on the catalytic activity of tungsten-based catalysts was investigated in the metathesis of ethylene and trans-2-butene at 450oC and atmospheric pressure. The presence of tungsten active species was confirmed by UV-Vis and Raman spectroscopy. Compared to the WO3-based catalysts treated in air, higher amount of WO42- tetrahedral species and lower amount of WO3 crystalline species were observed on the N2-treated ones. These contribute to the higher conversion of 2-butene and propylene selectivity during 10 h time-on-stream. Moreover, N2 treatment led to lower amount of coke formation as revealed by TPO of the spent catalysts.

Keywords : metathesis, pretreatment, propylene, tungsten
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