

AN098 *n*-Heptane isomerization over molybdenum oxide supported catalysts

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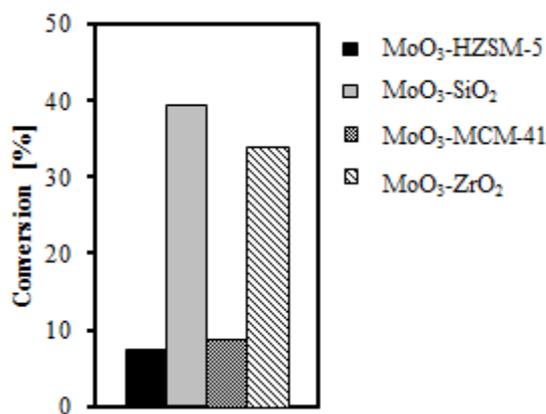
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Concern over the negative effects of fuel and oil usage on the environment has caused changes in regulations with severe impacts on gasoline, other jet fuels and lubricating oils. In order to improve the octane quality of a gasoline fraction, the refinery industry uses some high-octane rating components that are paraffinic in nature. The octane index is improved by increasing the degree of iso-alkane branching. Since the highly branched isomers have a relatively low environmental impact, the skeletal isomerization of *n*-alkane can be a key technology for production of high quality gasoline [1]. However, the practical application of this process has only been confined to short chain alkanes, because the isomerization of long-chain alkanes is usually accompanied by undesirable cracking. Thus, catalysts with a sufficiently good balance of metal and acid functions under suitable reaction conditions are generally needed to suppress cracking in order to achieve high isomerization selectivity for long-chain alkanes [2]. Molybdenum oxide (MoO₃) supported catalysts have been extensively studied in recent years due to their possible potential to catalyze the isomerization of linear alkanes [3]. Based on previous study, catalyst support is one of the crucial factors that influence the catalyst acidity [4].

Therefore, in this study, a series of MoO₃ catalyst supported by HZSM-5, MCM-41, SiO₂ and ZrO₂ was prepared by impregnation method. Their structural property was characterized using nitrogen physisorption analysis and the acidic property was determined by pyridine adsorbed IR spectroscopy. The catalytic property of all catalyst was evaluated over *n*-heptane isomerization at 623 K. The result showed that MoO₃-ZrO₂ catalyst exhibits the highest catalytic activity with 33.9 % conversion. The result was attributed from the Lewis acid property of the catalyst which was crucial in the *n*-heptane isomerization. Comparison between all the catalyst acidic property and their catalytic activity is discussed.



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