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Abstract

Keywords

1. Introduction

2. Experimental

3. Results and discussion

4. Conclusion

Acknowledgements

Appendix A. Supplementary material

References

Figures and tables

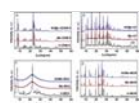


Table 1

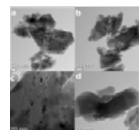
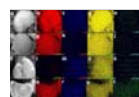
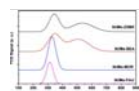
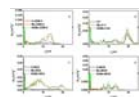


Table 2

Fuel

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Full Length Article

Hydrocracking of FT-wax to fuels over non-noble metal catalysts

Janardhan L. Hodala, Jae-Sun Jung, Eun-Hyeok Yang, Gi Hoon Hong, Young Su Noh, Dong Ju Moon

Clean Energy Research Centre, Korea Institute of Science and Technology, Seoul 02792, South Korea

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Abstract

Hydrocracking is an important reaction in petrochemical industries to synthesize the high value low molecular weight hydrocarbons from low valued feedstock and also from waxes which are produced from Fischer-Tropsch synthesis. Ni was impregnated over the NaOH treated Zeolite ZSM-5, Beta, H-Y and Mordenite. The catalysts were characterized by XRD, N₂-sorption, SEM and TEM, etc. Under the optimized conditions of temperature (300 °C), pressure (10 barg), reaction time (1 h) and catalyst weight (300 mg), with eicosane as feed, conversion, liquid products and gaseous products selectivities were 97.6%, 84.1% and 15.9% respectively. It was found that Sasol FT-wax and FT-wax from KIST pilot plant showed gaseous products 10.6 and 12.8% respectively and the product distribution for both the feeds were in the range of C₅–C₃₀. Eicosane conversion improved after desilicating zeolite and conversion improved further over Ni impregnated desilicated zeolite. The activity of catalyst depends on the acidic strength of zeolite framework irrespective of their acid site density. Bi-functional catalyst with non-noble metal performed well under the studied conditions.

Keywords

Hydrocracking; FT-wax upgrading; Fuels; Non-noble metal catalysts; Hierarchical zeolites

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