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นิกเกิลโมลิบดีนัม/อะลูมินา และ HZSM-5



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HYDROCRACKING OF USED LUBRICATING OIL ON Ni-Mo/Al₂O₃
AND HZSM-5 CATALYSTS

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This research was a study of hydrocracking process of used lubricating oil on different types of catalyst to investigate the using of used lubricating oil taken from automobile engine. The catalysts were Ni-Mo/Al₂O₃ and HZSM-5 catalyst. The hydrocracking process was performed in a microreactor at initial hydrogen pressure of 0 to 200 psi, reaction temperature range from 400 to 470 °C, reaction time range from 30 to 120 minutes for Ni-Mo/Al₂O₃ and 30 to 90 minutes for HZSM-5 catalyst, amount of catalyst range from 0.0% to 5.0% by weight for Ni-Mo/Al₂O₃ and 0.0% to 0.6% by weight for HZSM-5 catalyst.

The light oil product was analyzed by Simulated Distillation Gas Chromatography, (DGC). The experimental results showed the optimum conditions of the two catalysts at reaction temperature 450 °C, initial hydrogen pressure 100 psi, reaction time 90 minutes for Ni-Mo/Al₂O₃ and 60 minutes for HZSM-5 catalyst, 1.0% by weight of Ni-Mo/Al₂O₃ and 0.5% by weight of HZSM-5. The light oil product yielded in case of using Ni-Mo/Al₂O₃ was 85.64%, the oil compositions were consist of 36.15% of Naphtha, 11.49% of kerosene, 11.21% of light oil, 8.77% of heavy gas oil and 18.02% of long residue. A slightly different results of light oil yielded and composition for two catalysts were observed. The light oil yield in case of using HZSM-5 was 85.46%, whereas oil compositions were consist of 34.87% of naphtha, 11.03% of kerosene, 11.49% of light gas oil, 8.73% of heavy gas oil and 19.34% of long residue.

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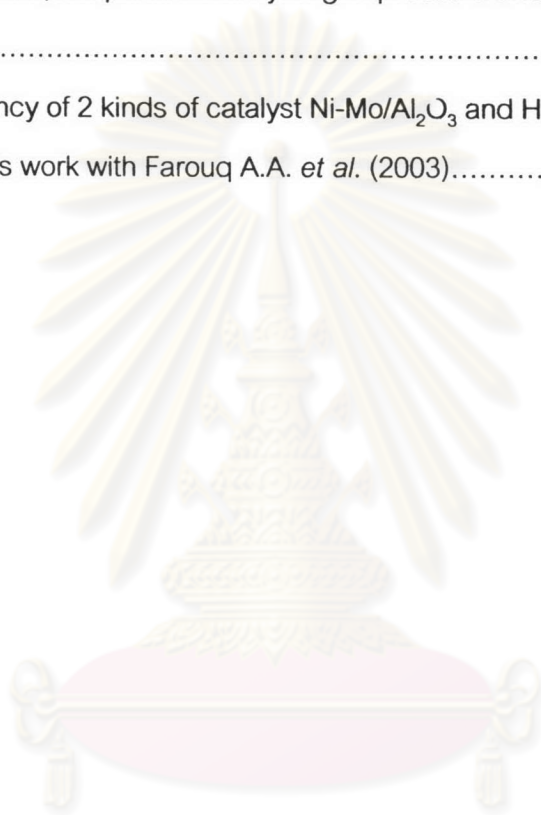


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ABBREVIATIONS

DGC	:	Simulated Distillation Gas Chromatography
Ni-Mo/Al ₂ O ₃	:	nickel molybdenum on alumina
psi	:	pounds per square inches
ASTM D 2887	:	Standard Test method for Boiling Range distribution of Petroleum Fractions Gas Chromatography.



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