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ISOMERIZATION OF NATURAL GAS LIQUID

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**A Thesis Submitted in Partial Fulfilment of the Requirements
for the Degree of Master of Science**

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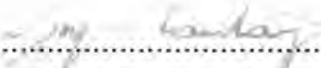
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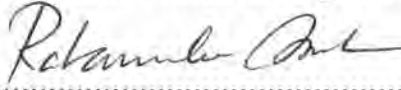
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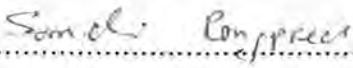
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พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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งานวิจัยนี้ได้ศึกษาการทำปฏิกิริยาไอโซเมอโรเซชันของของเหลวก๊าซธรรมชาติโดยใช้ตัวเร่งปฏิกิริยาประเภท 2 หน้าที คือ แพลตินัม-ฟลูออไรด์บนอะลูมินา ทำการเปลี่ยนโครงสร้างทางเคมีของสารประกอบที่มีอยู่ในของเหลวก๊าซธรรมชาติ ซึ่งการศึกษาระงะทำโดยการแปรค่าอุณหภูมิในช่วง 370-450 องศาเซลเซียส ภายใต้ความดันของก๊าซไฮโดรเจนในช่วง 40-80 ปอนด์ต่อลูกบาศก์นิ้ว และได้ศึกษาถึงผลของความเข้มข้นของตัวเร่งปฏิกิริยาที่ความเข้มข้นต่าง ๆ ของแพลตินัมและฟลูออไรด์ สำหรับสภาวะที่เหมาะสมในการทำปฏิกิริยาไอโซเมอโรเซชันของของเหลวก๊าซธรรมชาติ คือ ที่อุณหภูมิ 370 องศาเซลเซียส ภายใต้ความดันของก๊าซไฮโดรเจน 60 ปอนด์ต่อลูกบาศก์นิ้ว โดยใช้ตัวเร่งปฏิกิริยาที่มีความเข้มข้นของแพลตินัมร้อยละ 0.6 และฟลูออไรด์ร้อยละ 1.0 บนตัวรองรับอะลูมินา

ผลการวิจัยพบว่าผลิตภัณฑ์ที่ได้มีค่าออกเทนเพิ่มขึ้น เนื่องจากได้สารประกอบไฮโดรคาร์บอนที่มีโครงสร้างแบบโซ่กิ่งและสารประกอบอะโรมาติกเพิ่มขึ้น ในขณะที่สารประกอบไฮโดรคาร์บอนที่มีโครงสร้างแบบโซ่ตรงลดลง

ภาควิชา..... สหสาขาวิชาปิโตรเคมี-โพลีเมอร์.....
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ลายมือชื่อนิสิต..... นามดี นิสานนท์.....
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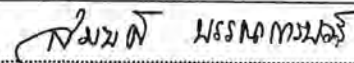
Isomerization reactions of Natural Gas Liquid (NGL) in this research were performed by using bifunctional catalysts, platinum-fluoride on alumina support, to change the chemical structure of compounds existing in NGL. Studies were operated by varying temperatures at 370-450°C, under 40-80 psi hydrogen pressures. Additionally, the catalyst concentration effects were also studied by varying platinum and fluoride contents. The optimum condition in isomerization of NGL is the reaction that operated at 370°C, under 60 psi hydrogen pressure and using the 0.6%Pt-1.0%F on alumina as catalyst.

The isomerization products had higher octane number than NGL. The branched-chain hydrocarbon compounds and aromatic compounds were increased while the straight-chain hydrocarbon compounds were decreased.

ภาควิชา..... สหสาขาวิชาปิโตรเคมี-โพลีเมอร์

สาขาวิชา..... ปิโตรเคมี

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ลายมือชื่อนิสิต..... 

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CONTENTS

	Page
ABSTRACT IN THAI.....	iv
ABSTRACT IN ENGLISH.....	v
ACKNOWLEDGEMENTS.....	vi
CONTENTS.....	vii
LIST OF TABLES.....	x
LIST OF FIGURES.....	xii
ABBREVIATIONS.....	xvi
CHAPTER	
I INTRODUCTION	
Objectives and Scope of the Research.....	4
II THEORETICAL CONSIDERATION	
Bifunctional Catalysts.....	5
1. Generation of Isomerization Catalysts.....	5
2. Metallic Component.....	7
3. Acidic Component.....	9
Reactions Occuring over Bifunctional Catalysts.....	11
1. General Aspects of Reaction Mechanisms.....	11
2. Description of Catalytic Reforming Reactions.....	13
3. Thermodynamic Considerations.....	14
4. Role of Hydrogen in Isomerization Reactions.....	16
Antiknock Quality.....	17

	Page
III EXPERIMENTAL	
Apparatus and Instruments.....	19
Materials.....	20
Preparation, Activation and Regeneration of Catalysts.....	21
1. Preparation of Catalysts.....	21
1.1 Impregnation of Platinum on Alumina Support.....	21
1.2 Impregnation of Fluoride on Pt/Alumina Catalyst.....	21
2. Activation of Catalysts.....	22
3. Regeneration of Catalysts.....	22
Isomerization Reactions Procedure.....	22
1. Reaction Unit.....	22
2. Reaction Procedure.....	25
Procedures in Study of Various Effects on Isomerization Reactions.....	26
1. Study of Temperature Effect.....	26
2. Study of Hydrogen Pressure Effect.....	26
3. Studies of Catalyst Concentration Effects.....	27
3.1 Study of Hydrogenation-Dehydrogenation Center Effect.....	27
3.2 Study of Acidic Center Effect.....	27
4. Further Studies of Activities of Used Catalysts and Reproducibility.....	28
Analysis of Reactant and Products.....	28
Determination of Antiknock Property.....	29
Analysis of Total Aromatics and Benzene	30
IV RESULTS AND DISCUSSION	
Characterization of NGL and Products.....	31
Studies of Various Effects on Isomerization Reactions.....	34

	Page
1. Study of Temperature Effect.....	36
2. Study of Hydrogen Pressure Effect.....	40
3. Studies of Catalyst Concentration Effects.....	43
3.1 Study of Hydrogenation-Dehydrogenation Center Effect.....	44
3.2 Study of Acidic Center Effect.....	47
Studies of Some Physical Properties.....	50
1. Selection of the Optimum Condition.....	50
2. Results of Antiknock Property and the Other Physical Properties.....	51
Further Studies of Activities of Used Catalysts and Reproducibility.....	52
1. Activities of Used Catalysts.....	52
2. Reproducibility.....	55
V CONCLUSION.....	58
SUGGESTIONS FOR FUTURE WORKS.....	59
REFERENCES.....	60
APPENDIXES.....	63
APPENDIX A.....	64
APPENDIX B.....	77
APPENDIX C.....	83
VITA.....	94

LIST OF TABLES

TABLE	Page
1.1	Research Octane Numbers of Some Hydrocarbon Compounds.....2
2.1	Three Generations of Paraffin Isomerization Catalysts.....7
2.2	Rate of the Dehydrogenation of Cyclohexane over Different Catalysts.....9
2.3	Thermodynamic Data on Reactions of C ₆ Hydrocarbons.....15
2.4	Operating Conditions for Research and Motor Methods.....18
4.1	Identification of NGL's Compositions.....33
4.2	Heat of Formation for Typical Reactions.....38
4.3	Influence of Temperature on the Reactions.....39
4.4	Data of Some Physical Properties.....51
B1	%Compositions of Products Obtained from Using 0.3%Pt-0.5%F/Al ₂ O ₃ (fresh#1) Catalyst.....77
B2	%Compositions of Products Obtained from Using 0.3%Pt-0.5%F/Al ₂ O ₃ (fresh#2) Catalyst and 0.3%Pt-0.5%F/Al ₂ O ₃ (regenerated#1 & regenerated#2) Catalysts.....78
B3	%Compositions of Products Obtained from Using 0.6%Pt-0.5%F/Al ₂ O ₃ Catalyst.....79
B4	%Compositions of Products Obtained from Using 0.9%Pt-0.5%F/Al ₂ O ₃ Catalyst.....80
B5	%Compositions of Products Obtained from Using 0.6%Pt/Al ₂ O ₃ Catalyst.....81
B6	%Compositions of Products Obtained from Using 0.3%Pt-1.0%F/Al ₂ O ₃ Catalyst.....82

	Page
C1 %Total Conversions in Significant Reactions Obtained from Using 0.3%Pt-0.5%F/Al ₂ O ₃ (fresh#1) Catalysts.....	83
C2 %Total Conversions in Significant Reactions Obtained from Using 0.3%Pt-0.5%F/Al ₂ O ₃ (fresh#2) Catalyst and 0.3%Pt- 0.5%F/Al ₂ O ₃ (regenerated#1 & regenerated#2) Catalyst.....	84
C3 %Total Conversions in Significant Reactions Obtained from Using 0.6%Pt-0.5%F/Al ₂ O ₃ Catalyst.....	85
C4 %Total Conversions in Significant Reactions Obtained from Using 0.9%Pt-0.5%F/Al ₂ O ₃ Catalyst.....	86
C5 %Total Conversions in Significant Reactions Obtained from Using 0.6%Pt/Al ₂ O ₃ Catalyst.....	87
C6 %Total Conversions in Significant Reactions Obtained from Using 0.3%Pt-1.0%F/Al ₂ O ₃ Catalyst.....	88

LIST OF FIGURES

FIGURE	Page
2.1	Reaction pathways in reforming C ₆ hydrocarbons.....12
2.2	Effect of hydrogen pressure on the rate of skeletal isomerization of <i>n</i> -heptane over Pt/Al ₂ O ₃ catalyst.....16
2.3	Effect of hydrogen pressure on the rate of aromatization (dehydrocyclization) of <i>n</i> -heptane over Pt/Al ₂ O ₃ catalyst.....17
3.1	Schematic drawing of the reaction unit.....23
3.2	The reaction unit.....24
4.1	GC Chromatogram of NGL.....32
4.2	Comparison of temperatures effect on the significant reactions of NGL under 60 psi H ₂ over 0.3%Pt-0.5%F on Alumina.....36
4.3	Values of standard equilibrium constants at 800 K for various structural conversions of <i>n</i> -hexane and cyclohexane, with commentary on the rates of the forward reactions over a bifunctional catalyst on the right.....37
4.4	Comparison in Skeletal Isomerization Reactions of NGL under different H ₂ pressures, over 0.6%Pt/Al ₂ O ₃ catalyst.....40
4.5	Comparison in Aromatization Reactions of NGL under different H ₂ pressures, over 0.6%Pt/Al ₂ O ₃ catalyst.....41
4.6	Comparison in Dehydrogenation Reactions of NGL under different H ₂ pressures, over 0.6%Pt/Al ₂ O ₃ catalyst.....41
4.7	Comparison in Hydrocracking Reactions of NGL under different H ₂ pressures, over 0.6%Pt/Al ₂ O ₃ catalyst.....42
4.8	Comparison of Hydrogenation Center Effect in Skeletal Isomerization Reactions of NGL under 60 psi H ₂ (varying in different concentration of Pt on 0.5%F/Al ₂ O ₃ catalyst.....44

4.9	Comparison of Hydrogenation Center Effect in Aromatization Reactions of NGL under 60 psi H ₂ (varying in different concentration of Pt on 0.5%F/Al ₂ O ₃ catalyst.....	45
4.10	Comparison of Hydrogenation Center Effect in Dehydrogenation Reactions of NGL under 60 psi H ₂ (varying in different concentration of Pt on 0.5%F/Al ₂ O ₃ catalyst.....	45
4.11	Comparison of Hydrogenation Center Effect in Hydrocracking Reactions of NGL under 60 psi H ₂ (varying in different concentration of Pt on 0.5%F/Al ₂ O ₃ catalyst.....	46
4.12	Comparison of Acidic Center Effect in Skeletal Isomerization Reactions of NGL under 60 psi H ₂ (varying in different concentration of Pt on 0.6%Pt/Al ₂ O ₃ catalyst.....	47
4.13	Comparison of Acidic Center Effect in Aromatization Reactions of NGL under 60 psi H ₂ (varying in different concentration of Pt on 0.6%Pt/Al ₂ O ₃ catalyst.....	48
4.14	Comparison of Acidic Center Effect in Dehydrogenation Reactions of NGL under 60 psi H ₂ (varying in different concentration of Pt on 0.6%Pt/Al ₂ O ₃ catalyst.....	48
4.15	Comparison of Acidic Center Effect in Hydrocracking Reactions of NGL under 60 psi H ₂ (varying in different concentration of Pt on 0.6%Pt/Al ₂ O ₃ catalyst.....	49
4.16	Comparison of Activities of Used Catalysts in Skeletal Isomerization Reactions of NGL under 60 psi H ₂ over 0.3%Pt-0.5%F on Alumina.....	53
4.17	Comparison of Activities of Used Catalysts in Aromatization Reactions of NGL under 60 psi H ₂ by 0.3%Pt-0.5%F/Al ₂ O ₃ . catalysts.....	53

4.18	Comparison of Activities of Used Catalysts in Dehydrogenation Reactions of NGL under 60 psi H ₂ by 0.3%Pt-0.5%F/Al ₂ O ₃ catalysts.....	54
4.19	Comparison of Activities of Used Catalysts in Hydrocracking Reactions of NGL under 60 psi H ₂ by 0.3%Pt-0.5%F/Al ₂ O ₃ catalysts.....	54
4.20	Reproducibility Study in Skeletal Isomerization Reactions of NGL under 60 psi H ₂ by 0.3%Pt-0.5%F/Al ₂ O ₃ catalysts.....	56
4.21	Reproducibility Study in Aromatization Reactions of NGL under 60 psi H ₂ by 0.3%Pt-0.5%F/Al ₂ O ₃ catalysts.....	56
4.22	Reproducibility Study in Dehydrogenation Reactions of NGL under 60 psi H ₂ by 0.3%Pt-0.5%F/Al ₂ O ₃ catalysts.....	57
4.23	Reproducibility Study in Hydrocracking Reactions of NGL under 60 psi H ₂ by 0.3%Pt-0.5%F/Al ₂ O ₃ catalysts.....	57
A1	GC Chromatogram of product from using 0.6%Pt-1.0%F/Al ₂ O ₃ catalyst, under 60 psi H ₂ , 370°C. (The Optimum Reaction Condition).....	64
A2	GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 40 psi H ₂ , 370°C.....	65
A3	GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 60 psi H ₂ , 370°C.....	66
A4	GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 80 psi H ₂ , 370°C.....	67
A5	GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 40 psi H ₂ , 400°C.....	68
A6	GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 60 psi H ₂ , 400°C.....	69

	Page
A7 GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 80 psi H ₂ , 400°C.....	70
A8 GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 40 psi H ₂ , 420°C.....	71
A9 GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 60 psi H ₂ , 420°C.....	72
A10 GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 80 psi H ₂ , 420°C.....	73
A11 GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 40 psi H ₂ , 450°C.....	74
A12 GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 60 psi H ₂ , 450°C.....	75
A13 GC Chromatogram of product from using 0.6%Pt/Al ₂ O ₃ catalyst, under 80 psi H ₂ , 450°C.....	76

ABBREVIATIONS

NGL	=	Natural Gas Liquid
RON	=	Research Octane Number
BTX	=	Benzene, Toluene, and the Xylenes
O.D.	=	Outer Diameter
I.D.	=	Inner Diameter
GC	=	Gas Chromatograph
Pt	=	Platinum
F	=	Fluoride
Al ₂ O ₃	=	Alumina Support
°C	=	degree of Celsius
psi	=	pound per square inches
g	=	gramme
ml	=	millilitre
min	=	minute
hrs	=	hours
H ₂	=	Hydrogen gas
MTBE	=	methyl-tert-butyl ether
ULP (Super 97)	=	Unleaded Performance (Super Octane Number 97) Gasoline