

การเตรียมสารประกอบที่เป็นอนุพันธ์ของเทอร์โซล
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**PREPARATION OF TETRAZOLE DERIVATIVES
AS CETANE IMPROVER**

Mr. Wichit Rattanatawonkiti

A Thesis Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Science

Program of Petrochemistry

Graduate School

Chulalongkorn University

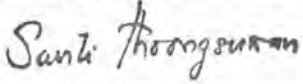
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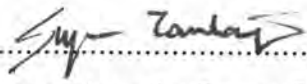
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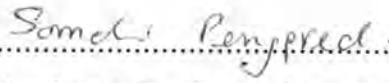
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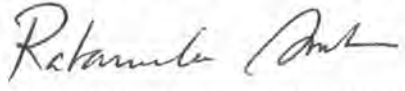
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พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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การเตรียมสารประกอบที่เป็นอนุพันธ์ของเทตระโซล สามารถเตรียมได้โดยตรงจาก โซเดียม-
เอไซด์ กับสารประกอบที่เป็นอนุพันธ์ของแอริลไนไตรด์ หรือ การใส่หมู่นไนโตรแอริลลงในสารประกอบ
ที่เป็นอนุพันธ์ของเทตระโซล เมื่อเติมกรดไฮโดรคลอริกลงไปในปฏิกิริยาจะได้ผลิตภัณฑ์ที่เป็นอนุพันธ์ของ
เทตระโซล ซึ่งนำไปตรวจสอบโครงสร้างโดยใช้เทคนิคทางสเปกโทรสโกปี อันได้แก่ อินฟราเรดสเปก-
โทรสโกปี นิวเคลียร์แมกเนติกเรโซแนนซ์สเปกโทรสโกปีและแมสสเปกโทรสโกปี

สารประกอบที่เป็นอนุพันธ์ของเทตระโซลสามารถละลายด้วยแอลกอฮอล์และผสมกับน้ำมัน ได้ดี
ซึ่งมีผลในการเพิ่มค่าซีเทนได้ เมื่อมีปริมาณที่ใช้ 0.05 เปอร์เซ็นต์โดยน้ำหนักและกำหนดคุณสมบัติการด้าน
ทานการน็อคด้วยการวัดค่าซีเทนและดัชนีซีเทน ซึ่งให้ค่าซีเทนเพิ่มขึ้นประมาณ 0.1-0.2 ซีเทน ทำให้สามารถ
ยกระดับคุณภาพของน้ำมันดีเซลได้ดีขึ้น

ภาควิชา.....
สาขาวิชา.....
ปีการศึกษา.....

ลายมือชื่อนิสิต.....
ลายมือชื่ออาจารย์ที่ปรึกษา.....
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....

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KEY WORD: TETRAZOLE DERIVATIVES / CETANE IMPROVER / CETANE NUMBER

WICHIT RATTANATAWONKITI : PREPARATION OF TETRAZOLE DERIVATIVES AS

CETANE IMPROVER. THESIS ADVISOR : ASSIST. PROF. SOMCHAI PENGPRECHA, Ph.D.,

THESIS CO-ADVISOR : RATANAVALLEE IN-OCHANON 97 pp. ISBN 974-633-298-8

Tetrazole derivatives can be prepared by direct synthesis from sodium azide and aryl nitrile derivatives or introduction of nitroaryl group into the tetrazole derivatives. Finally, tetrazole derivatives were obtained by treatment with hydrochloric acid and identified by spectroscopic techniques such as Infrared Spectroscopy, Nuclear Magnetic Resonance Spectroscopy, and Mass Spectroscopy.

Tetrazole derivatives can be dissolved in alcohol. They are easy to blend with diesel fuel. Tetrazole derivatives are effective in increasing cetane number only when used in a concentration of 0.05 % by weight. The antiknock property was determined by cetane number and cetane index which cetane number increased by 0.1-0.2 cetane unit. It can be upgrade diesel fuel qualitatively.

ภาควิชา.....
สาขาวิชา.....
ปีการศึกษา.....

ลายมือชื่อนิสิต.....
ลายมือชื่ออาจารย์ที่ปรึกษา.....
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....



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LIST OF ABBREVIATIONS

°C	:	Celcius degree
°F	:	Fahrenheit degree
rmp	:	Round per minute
MPa	:	Mega pascal
m.p.	:	Melting point
No.	:	Number
% mole	:	Mole percent
% yield	:	Yield percent
% wt.	:	Weight percent
% v/v	:	Percent volume by volume
% C _p	:	Percent of paraffinic carbon
% C _n	:	Percent of Naphthenic carbon
% C _a	:	Percent of aromatic carbon
CCI	:	Calculated cetane index
base	:	Base diesel fuel
% V	:	percent by volume
CFR	:	Cooperative fuel research council
TDC	:	Top dead center
° BTDC	:	Crank angle degrees of top dead center
Nm	:	Newton metre
mL/min	:	Minlilitre per minute
s	:	singlet
d	:	doublet
m	:	multiplet