

เอพอกซิเดชันอย่างเลือกจำเพาะของแอลกิน
ซึ่งเร่งปฏิกิริยาด้วยสารประกอบเชิงซ้อนโลหะซิปเบล

นางสาวธนภรณ์ รดีธนกุล

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต

สาขาวิชาเคมี ภาควิชาเคมี

บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย

ปีการศึกษา 2541

ISBN 974-639-322-7

ลิขสิทธิ์ของบัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย

**SELECTIVE EPOXIDATION OF ALKENES
CATALYZED BY METAL SCHIFF'S BASE COMPLEXES**

Miss Thanaporn Radeethanakul

A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Chemistry

Department of Chemistry

Graduate School

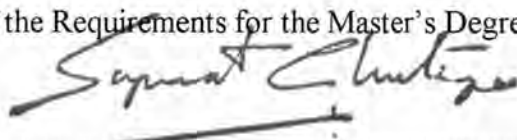
Chulalongkorn University

Academic Year 1998

ISBN 974-639-322-7

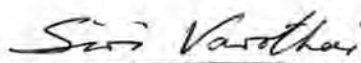
Thesis Title Selective Epoxidation of Alkenes Catalyzed by
Metal Schiff's Base Complexes
By Miss Thanaporn Radeethanakul
Department Chemistry
Thesis Advisor Assistant Professor Warinthorn Chavasiri, Ph.D.

Accepted by the Graduate School, Chulalongkorn University in Partial
Fulfillment of the Requirements for the Master's Degree.

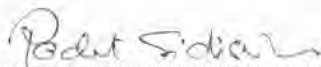


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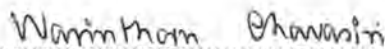
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ธนภรณ์ รดีธนกุล : เอพอกซิเดชันอย่างเลือกจำเพาะของแอลคีนซึ่งเร่งปฏิกิริยาด้วยสารเชิงซ้อน
โลหะ Schiff เบส (SELECTIVE EPOXIDATION OF ALKENES CATALYZED BY
METAL SCHIFF'S BASE COMPLEXES) อ. ที่ปรึกษา : ผศ. ดร. วรินทร์ ชวศิริ;
87 หน้า. ISBN 974-639-322-7

จากการทดสอบเบื้องต้นถึงความสามารถในการเป็นตัวเร่งปฏิกิริยาสำหรับปฏิกิริยาเอพอกซิเดชัน
ของไซโคลเฮกซีนของสารประกอบเชิงซ้อนโลหะชาเลน 7 ชนิด ซึ่งให้เห็นว่า โคโรเมียม(III) ชาเลน ในเตรต
เป็นตัวเร่งปฏิกิริยาที่มีศักยภาพสูง สภาวะที่เหมาะสมของปฏิกิริยาที่ศึกษา ได้แก่ ชนิดและปริมาณของอัลดี
ไฮด์ บรรยากาศที่ใช้ ตัวทำละลายและปริมาณตัวเร่งปฏิกิริยา ภายใต้สภาวะที่เหมาะสม ไซโคลเฮกซี
นเปลี่ยนรูปไปเป็นเอพอกไซด์ที่สอดคล้องกันได้อย่างเลือกจำเพาะในปริมาณที่สูงมาก ในขณะที่พันธะคู่ของ
สารประกอบที่มีพันธะคู่ที่ปลายโมเลกุลจะแตกออก ระบบนี้ได้พัฒนานำไปประยุกต์ใช้สำหรับปฏิกิริยาเอ
พอกซิเดชันของผลิตภัณฑ์ธรรมชาติบางชนิด ได้แก่ (+)-valencene และ pterocarpol ส่วนในกรณีของ
 α - และ γ -terpinene พบว่าปฏิกิริยาเอโรมาไทเซชันแซชันเกิดขึ้นได้ดีกว่าปฏิกิริยาเอพอกซิเดชัน

ภาควิชา..... เคมี
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ลายมือชื่อนิสิต..... ธนภรณ์ รดีธนกุล
ลายมือชื่ออาจารย์ที่ปรึกษา..... วรินทร์ ชวศิริ
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม..... -

3970649523 : MAJOR CHEMISTRY

KEY WORD: EPOXIDATION, ALKENE, SCHIFF'S BASE

THANAPORN RADEETHANAKUL : SELECTIVE EPOXIDATION OF
ALKENES CATALYZED BY METAL SCHIFF'S BASE COMPLEXES.THESIS ADVISOR: ASSISTANT PROFESSOR WARINTHORN CHAVASIRI,
Ph.D. 87 pp. ISBN 974-639-322-7

The screening of catalytic ability of seven metal-salen complexes for epoxidation of cyclohexene indicated that Cr(III) salen.NO₃ showed high potential catalyst for this purpose. The optimum conditions including the amount and type of aldehyde, reaction atmosphere, solvent and the amount of catalyst were explored. Under the optimum conditions, cycloalkenes were selectively transformed to their corresponding epoxides in excellent yield, whereas the terminal double bonds containing compounds were cleaved. This developed reaction could also be applied to the epoxidation of some naturally occurring compounds, namely: (+)-valencene and ptercarpol. In the case of α - and γ -terpinenes, the aromatization was found to be prevailed over the epoxidation.

ภาควิชา..... ๖๑๗
สาขาวิชา..... ๒๑๗
ปีการศึกษา..... ๒๕๔๑

ลายมือชื่อนิติต..... นนทธรณ์ รดีอนกุล
ลายมือชื่ออาจารย์ที่ปรึกษา..... อ.พนธ์ งามใส
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม..... -

ACKNOWLEDGMENT

The author would like to express her deep gratitude to her advisor, Assistant Professor Dr. Warinthorn Chavasiri for his very kind assistance, generous guidance and encouragement throughout this research. She is grateful to Associate Professor Dr. Siri Varothai, Professor Dr. Padet Sidisunthorn, Dr. Oravan Sanguanruang, serving as the chairman and members of her thesis committee, respectively, for their valuable comments and suggestions.

Thanks are extended to Associate Professor Dr. Udom kokpol, Associate Professor Gaysorn Veerachato, Dr. Santi Tip-pyang and Dr. Worawan Bhanumnavin of Natural Products Research Unit, Department of Chemistry, Faculty of Science, Chulalongkorn University for their helpful discussion and support. The author wishes to thank Dr. Athicha Chaysuwan, Assistant Professor Dr. Wimonrat Trakarnpruk, and Dr. Roderick Bates for their comments and suggestions.

The author would like to express her gratitude to National Science and Technology Development Agency (NSTDA) for granting a scholarship during June 1996 until May 1998, and to the Chemistry Department, Faculty of Science, Chulalongkorn University for permitting to use some equipment and support during this research.

Finally, the author would like to express her deep gratitude to her parents and family members for their love, understanding, encouragement and social support throughout her entire education.

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LIST OF ABBREVIATIONS

DMA	=	dimethylacetamide
HMPT	=	hexamethylphosphotriamide
DMF	=	dimethylformamide
PA	=	2-pyridinecarboxaldehyde
ppd	=	<i>p</i> -phenylenediamine
mpd	=	<i>m</i> -phenylenediamine
opd	=	<i>o</i> -phenylenediamine
SALEN	=	<i>bis</i> (salicylaldehyde) ethylenediamine
ANAC	=	<i>bis</i> (anthranilic acid) acetylacetone
AACEN	=	<i>bis</i> (acetoacetanilide) ethylenediamine
ANAAN	=	<i>bis</i> (anthranilic acid) acetoacetanilide
ACDAP	=	<i>bis</i> (acetylacetone) diaminopropane
SALPA	=	<i>bis</i> (salicylaldehyde) propylenediamine
ACEN	=	<i>bis</i> (acetylacetone) ethylenediamine
<i>m</i> -CPBA	=	<i>m</i> -chloroperbenzoic acid
NMO	=	<i>N</i> -methylmorpholine- <i>N</i> -oxide
°C	=	degree celsius
mmol	=	milimolar
mL	=	mililitre
NMR	=	nuclear magnetic resonance
IR	=	infrared
g	=	gram (s)
s	=	sharp
br	=	broad
acac	=	acetylacetonate
sal	=	salicylaldehyde