

**DEVELOPMENT OF *N,N*-BIS(2-HYDROXYALKYLBENZYL)
ALKYLAMINE DERIVATIVES TO CROWN ETHERS BASED
MACROCYCLES**



Thitiporn Rungsimanon

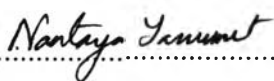
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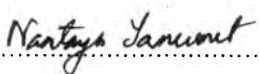
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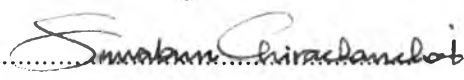
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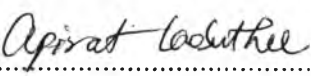

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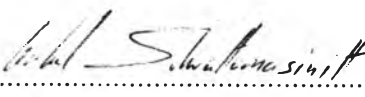
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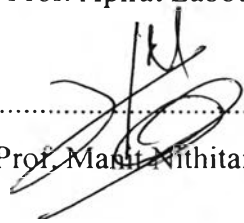

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บทคัดย่อ

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วิทยานิพนธ์ฉบับนี้มุ่งเน้นไปที่การพัฒนาอนุพันธ์เอ็น,เอ็น-บิส(2-ไฮดรอกซีอัลคิลเบนซิล)อัลคิลเอมีนไปสู่สารวงแหวนคราวน์อีเทอร์ อนุพันธ์เอ็น,เอ็น-บิส(2-ไฮดรอกซีอัลคิลเบนซิล)อัลคิลเอมีนประกอบไปด้วยสองหน่วยของฟีนอลเชื่อมต่อกันด้วยสายโซ่อาซามะทีลินภายใต้โครงร่างที่แข็งแรงทั้งระหว่างและภายในโมเลกุลด้วยพันธะไฮโดรเจน โครงสร้างที่เป็นเอกลักษณ์ของอนุพันธ์เหล่านี้จะทำให้ปฏิกิริยาการเกิดสารวงแหวนเป็นแบบจำเพาะ ส่วนแรกเป็นการศึกษาถึงการเกิดสารวงแหวนคราวน์อีเทอร์ชนิด [1+1] และ [2+2] ที่เตรียมจากเอ็น,เอ็น-บิส(2-ไฮดรอกซีอัลคิลเบนซิล)อัลคิลเอมีนทั้งที่ประกอบด้วยหมู่เออร์โทและปราศจากหมู่เออร์โทในหน่วยของฟีนอล ในส่วนแรกนี้ยังครอบคลุมไปถึงปรากฏการณ์การรวมตัวของสารวงแหวนจำเพาะเหล่านี้กับไอออนอัลคาไลน์ ในส่วนที่สองว่าด้วยเรื่องของความหลากหลายของสารวงแหวนที่ถูกควบคุมโดยโครงสร้างของเอ็น,เอ็น-บิส(2-ไฮดรอกซีอัลคิลเบนซิล)อัลคิลเอมีนเอง ภายหลังจากการทำปฏิกิริยาการเกิดสารวงแหวนด้วยสารประเภทไดโทซิลเลตเตดที่มีความยาวของสายโซ่แตกต่างกัน ในส่วนที่สามรายงานถึงผลของการส่งเสริมกันของพันธะไฮโดรเจนและการใช้โลหะจำเพาะในการเป็นรูปแบบที่ใช้ควบคุมการเกิดปฏิกิริยาการเกิดสารวงแหวนของอนุพันธ์เอ็น,เอ็น-บิส(2-ไฮดรอกซีอัลคิลเบนซิล)อัลคิลเอมีนเพื่อให้ได้สารวงแหวนชนิดเดียว ส่วนสุดท้ายเน้นถึงวิธีการเตรียมอย่างง่ายแต่มีประสิทธิภาพเพื่อให้ได้สารโคเบนโซโมโนอาซาคราวน์ที่มีขนาดวงแหวนต่างๆและอธิบายถึงโครงสร้างของสารโคเบนโซโมโนอาซาคราวน์เหล่านี้เกี่ยวข้องกับกำกับการเลือกจับโลหะอย่างไร

ABSTRACT

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Keywords: *N,N*-Bis(2-hydroxyalkylbenzyl)alkylamine/ Benzoxazine/ Crown ether/ Metal template/ Hydrogen bonding/ Macrocyclization/ Macrocyclic compound/ Ditosylated compound/ Host-guest ratio/ Inclusion phenomena/ Pedersen's technique/ Molar ratio method

The present work focuses on the development of *N,N*-bis(2-hydroxyalkylbenzyl)alkylamine derivatives to crown ether based macrocycles. As *N,N*-bis(2-hydroxyalkylbenzyl)alkylamine derivatives consist of two phenol units linked with aza-methylene linkage under the strong networks of inter- and intramolecular hydrogen bonds, their unique structures are expected for providing a specific macrocyclization. The first part involves with [1+1] and [2+2] crown ethers derived from *N,N*-bis(2-hydroxyalkylbenzyl)alkylamine with or without ortho-substituted group in phenol group. The first part also covers the inclusion phenomena of the selective macrocycles with alkali ions. The second part is about a variety of macrocycles after cyclization with various chain lengths of ditosylated compound induced by the structure of *N,N*-bis(2-hydroxyalkylbenzyl)alkylamine itself. In the third part, synergistic effects of a specific metal template and H-bonds in controlling macrocyclization of *N,N*-bis(2-hydroxyalkylbenzyl)alkylamine derivatives to obtain a single type of macrocycle are reported. The final part concentrates on a simple but effective preparation of ring-enlarged dibenzo-monoaza-crowns and how their structures are involved with the metal ion selectivity.

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