

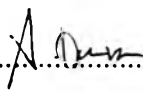
Silatrane Complexes from SiO₂ and Triisopropanolamine

Ms. Pensri Piboonchaisit

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By : Ms. Pensri Piboonchaisit
Program : Polymer Science
Thesis Advisors : 1. Assoc. Prof. Richard M. Laine
2. Asst. Prof. Sujitra Dhumrongvaraporn

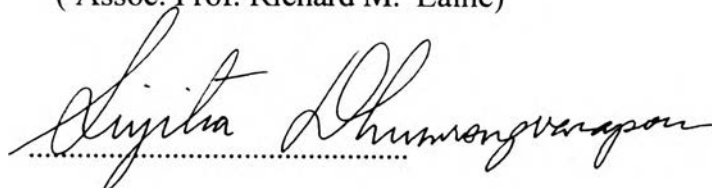
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.......... Director of the College
(Prof. Somchai Osuwan)

Thesis Committee

..........

(Assoc. Prof. Richard M. Laine)

..........

(Asst. Prof. Sujitra Dhumrongvaraporn)

..........

(Dr. Nantaya Yanumet)

ABSTRACT

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PENSRI PIBOONCHASIT : SILATRANE COMPLEXES FROM
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Synthesis of silatrane complexes can be done easily and directly from the reaction of very inexpensive compound, SiO₂ and trialkanolamine. The study focuses on two parts. First is to develop a reaction synthetic route to silatrane complexes directly from SiO₂ and triisopropanolamine. Ethylene glycol is used as the reaction solvent. The products are characterized by TGA, DSC, FAB⁺-MS, FT-IR, and NMR. The other one is to investigate the kinetic studies of the dissolution reaction to determine the reaction rate, reaction order, and activation energy by the integral method.

บทคัดย่อ

เพ็ญศรี พิบูลชัยสิทธิ์ : สารประกอบไซลาเทรนจากซิลิกอนไดออกไซด์ และ ไทรไอโซโพรพานอลามีน [Silatrane Complexes from SiO₂ and Triisopropanolamine],
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การสังเคราะห์สารประกอบไซลาเทรน สามารถสังเคราะห์ได้โดยตรงจากปฏิกิริยาของสารที่มีราคาไม่แพง ได้แก่ ซิลิกอนไดออกไซด์ และ ไทรอัลคานอลามีน งานวิจัยนี้แบ่งออกเป็น 2 ส่วน โดยส่วนแรก เป็นการพัฒนาวิธีการสังเคราะห์สารประกอบไซลาเทรนจากซิลิกอนไดออกไซด์ และ ไทรไอโซโพรพานอลามีน โดยใช้เอทิลีนไกลคอลเป็นตัวทำละลาย ผลิตภัณฑ์ที่ได้นำไปวิเคราะห์โครงสร้างและสมบัติทางกายภาพโดยใช้ TGA, DSC, FAB⁺-MS, FTIR และ NMR การศึกษาส่วนที่สองเป็นการศึกษาจลนศาสตร์ของปฏิกิริยาของการละลายซิลิกอนไดออกไซด์เพื่อหาอัตราเร็วของการเกิดปฏิกิริยา, อันดับและพลังงานกระตุ้นของปฏิกิริยาโดยใช้วิธีอินทริกัล

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