

**Effects of Sizing Agents on Silanol Condensation of Silane in
Solution**

Ms. Pachreeya Kulanuch

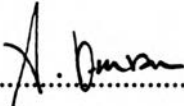
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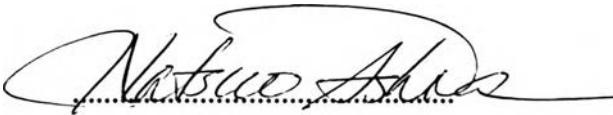
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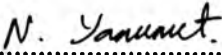
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ABSTRACT

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KEYWORDS : SILANE, SIZING AGENT, SILANOL CONDENSATION

PACHREEYA KULANUCH: EFFECTS OF SIZING AGENTS ON
SILANOL CONDENSATION OF SILANE IN SOLUTION. THESIS

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In the production of fiber glass in industry, silane coupling agent is not the only ingredient which is applied onto the glass fiber surface. There are other agents which are also treated on the glass fiber surface to provide additional properties such as fiber protection, lubrication, antistatic properties and so on. These sizing agents are expected to have an effect on the silanol condensation of silane. Fourier transform infrared spectroscopy (FTIR) and gel permeation chromatography (GPC) have been used to investigate the role of sizing agents on the silanol condensation. It was found that each type of sizing agents affects the condensation by different means depending on the interactions between silane and each type of sizing agents.

บทคัดย่อ

พัชรียา ภูลานุช: ผลกระทบของสารเติมแต่งต่อปฏิกิริยาควบแน่นของ
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ในอุตสาหกรรมการผลิตใยแก้ว สารคู่จับไซเลนไม่ใช่สารชนิด
เดียวที่ใช้เคลือบไปบนผิวของใยแก้ว แต่ยังมีสารเติมแต่งชนิดอื่นๆ
ที่ใช้เคลือบบนผิวของใยแก้วเพื่อเพิ่มคุณสมบัติบางชนิด เช่น เพื่อปกป้อง
พื้นผิว, หล่อลื่นพื้นผิวและป้องกันไฟฟ้าสถิตย์ที่เกิดขึ้นบนพื้นผิว สารเติม
แต่งเหล่านี้มีผลกระทบต่อปฏิกิริยาควบแน่นของสารคู่จับไซเลน

ในการวิจัยนี้ได้มีการศึกษาบทบาทของสารเติมแต่งที่มีผลกระทบ
ต่อปฏิกิริยาควบแน่นของสารคู่จับไซเลนโดยใช้ฟูเรียร์ทรานสฟอร์ม
อินฟราเรดสเปกโตรสโคปีและเจลเพอมีเอชันโครมาโตกราฟี ผลการ
ศึกษาพบว่าสารเติมแต่งแต่ละชนิดมีผลกระทบต่อปฏิกิริยาควบแน่นของ
สารคู่จับไซเลนด้วยกลไกที่แตกต่างกัน ขึ้นอยู่กับอันตรกิริยาที่เกิดขึ้น
ระหว่างสารเติมแต่งชนิดนั้นกับสารคู่จับไซเลน

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