

**THE MODIFICATIONS OF COTTON PROPERTIES BY
ADMICELLAR POLYMERIZATION**

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ABSTRACT

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The modification of cotton properties has been developed because cotton has deficiency in certain properties such as thermal stability and dyeing ability. Conventional methods for modifications of cotton properties employ the coating technique, which also closes the gaps between fibers and yarns resulting in fabric with poor moisture permeability. Admicellar polymerization is a technique which can be used to produce cotton with good ventilation. In the present work, two different monomers, 3,4-dichloro-1-butene and sodium styrene sulfonate, which can improve the thermal stability and dyeing ability of cotton, were used respectively. The results showed that the treated cotton has improved thermal stability and dyeing ability. Moreover, the dyeing of treated cotton can be done at room temperature with no addition of salt.

บทคัดย่อ

นายชัยภัทร ไพสุนทรสุข: การดัดแปลงคุณสมบัติของผ้าฝ้ายโดยกระบวนการแอคไมเซลลาต์พอลิเมอร์ไรซ์เซชัน (The Modification of Cotton Properties by Admicellar Polymerization) อ. ที่ปรึกษา ศ. ดร. เอ็ดการ์ โอเรียร์ และ ผศ. ดร. นันทยา ขานูเมศ 46 หน้า ISBN 974-13-0690-3

การดัดแปลงคุณสมบัติของผ้าฝ้ายได้มีการพัฒนาขึ้น เพื่อปรับปรุงข้อบกพร่องที่มีอยู่ในผ้าฝ้าย เช่น ความคงทนต่อความร้อน และ คุณสมบัติในการติดสี วิธีที่ใช้ดัดแปลงคุณสมบัติของผ้าฝ้ายโดยทั่วไปคือการเคลือบสารเคมีลงบนผ้า ทำให้ผ้าไม่สามารถระบายอากาศได้เนื่องจากเกิดการอุดตันในร่องผ้า กระบวนการแอคไมเซลลาต์พอลิเมอร์ไรซ์เซชันสามารถดัดแปลงคุณสมบัติของผ้าฝ้ายโดยที่คุณสมบัติการระบายอากาศยังคงอยู่ ในงานวิจัยนี้ใช้ 3,4-ไดคลอโร-1-บิวทีน และ โซเดียม สไตรีน ซัลโฟเนต เพื่อพัฒนาคุณสมบัติความคงทนต่อความร้อน และ คุณสมบัติในการติดสี จากการศึกษาพบว่า ผ้าฝ้ายที่ได้รับการเคลือบผิวมีความคงทนต่อความร้อนและคุณสมบัติในการติดสีที่ดีขึ้น นอกจากนี้การย้อมผ้ายังสามารถกระทำได้ที่อุณหภูมิห้องโดยไม่ต้องมีการใส่เกลือ

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