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ENHANCEMENT OF REACTIVE DYE UPTAKE ON CELLULOSE FABRIC WITH CHITOSAN

Miss Yupaporn Kitkulnumchai

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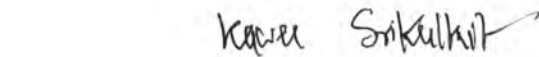
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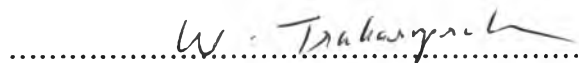
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การปรับปรุงพื้นผิวผ้าฝ้ายด้วยไคโตซานทำให้เพิ่มปริมาณการติดสีรีแอคทีฟและลดปริมาณการใช้เกลือในกระบวนการย้อมผ้า การออกซิไดซ์ผ้าฝ้ายด้วยโพแทสเซียมเปอร์ไอโอเดต ตามด้วยการเคลือบด้วยการทำปฏิกิริยารีดักทีฟแอมมิเนชันด้วยไคโตซานให้ปริมาณการติดของไคโตซานบนผ้าสูงที่สุด จากการวิเคราะห์ใน โครเจนด้วยเทคนิคเจดาล และจากผลเปอร์เซ็นต์เอกซอสชันและค่ากัลเลอร์บิลด์ในการย้อมด้วยสีรีแอคทีฟกลุ่มโมโนคลอโรไตรอะซีนและกลุ่มไวนิลซัลโฟน แสดงให้เห็นว่าการดัดแปลงพื้นผิวของผ้าด้วยวิธีนี้สามารถเพิ่มความสามารถในการดูดซับสีรีแอคทีฟของผ้าฝ้ายได้อย่างมาก โดยไม่มีผลกระทบต่อความคงทนของสีอย่างมีนัยสำคัญ การเพิ่มขึ้นของความสามารถในการดูดซับสีนำมาซึ่งกระบวนการย้อมที่ดีขึ้นคือสามารถใช้สีและเกลือในการย้อมลดปริมาณลงได้ครึ่งหนึ่งและ 14% ตามลำดับ

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The pretreatment of cotton fabrics with chitosan improved the reactive dyes uptake and lowered the concentration of salt required in the dyeing process. Oxidation of cotton fabric with  $KIO_4$  followed by reductive amination with chitosan led to the highest chitosan content in the fabric analyzed by Kjeldahl nitrogen analysis technique. The %exhaustion and color yield (K/S) in the dyeing process with mono-chloro-triazine and vinyl sulphone reactive dyes showed that this method of fabric modification considerably improved dye uptake of the fabric. The chitosan-modified fabric had no discernable adverse color fastness properties. The improvement of dye uptake brought about an improved dyeing process in which the dye and salt used could be reduced by half and 14% respectively.

Field of study Petrochemistry and Polymer Science Student's Yupaporn Kitkulnumchai  
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## LIST OF ABBREVIATION

cm	centimeter
mL	milliliter
°C	degree celsius
g	gram
M	molar
h	hour
%DD	%percent degree of acetylation
LR	liquor ratio
min	minute
%	percent
sec	second
$M_v$	molecular weight
$\lambda_{max}$	maximum wavelength
% owf	% on weight fabric