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DYE EXTRACTION FROM EUCALYPTUS LEAVES AND BARK
AND APPLICATION FOR SILK AND COTTON FABRIC DYEING

Mr. Rattanaphol Mongkholrattanasit

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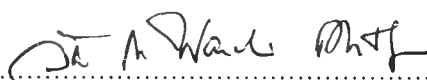
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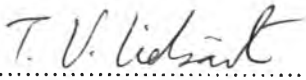
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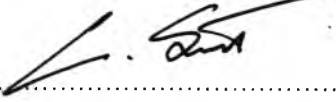
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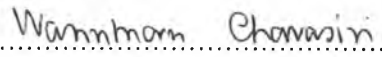

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งานวิจัยนี้ได้ศึกษาผลของการสกัดสีย้อมจากใบและเปลือกของต้นยูคาลิปตัส สภาวะการสกัด
ที่เหมาะสมคือ ใช้น้ำกลั่นทำการสกัดที่อุณหภูมิ 100 องศาเซลเซียส นาน 1 ชั่วโมง โดยใช้อัตราส่วน
ของวัตถุดิบต่อน้ำกลั่นเป็น 1:40 ซึ่งการสกัดด้วยวิธีนี้จะให้ค่าเปอร์เซ็นต์โดยรวมของแข็งสูงสุด สภาวะ
การทำออร์แดนท์ก่อนย้อมที่เหมาะสม ใช้อุณหภูมิ 30 องศาเซลเซียส นาน 10 นาที และใช้ปริมาณออร์
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ผ้าไหมและผ้าฝ้ายที่ผ่านกระบวนการทำออร์แดนท์ ก่อนการย้อมจะถูกนำมาย้อมในสภาวะที่
เหมาะสมดังนี้ สำหรับผ้าไหมใช้อุณหภูมิการย้อมที่ 90 องศาเซลเซียส นาน 40 นาที ค่าพีเอชน้ำย้อม
เป็น 4 และใช้อัตราส่วนวัสดุสิ่งทอต่อน้ำย้อมเป็น 1:30 สำหรับผ้าฝ้ายใช้อุณหภูมิการย้อมที่ 60 องศา
เซลเซียส และไม่ต้องปรับค่าพีเอชน้ำย้อม ส่วนสภาวะอื่น ๆ เหมือนกับการย้อมผ้าไหม ผ้าไหมที่ผ่าน
การย้อมสีจะได้สีเหลืองถึงน้ำตาล ยกเว้นเมื่อใช้เหล็กเป็นสารมอร์แดนท์จะได้สีเทาถึงน้ำตาลเข้ม
สำหรับผ้าฝ้ายที่ผ่านการย้อมสีจะได้สีเหลืองถึงส้ม ยกเว้นเมื่อใช้เหล็กเป็นสารมอร์แดนท์ จะได้สีเทา
อ่อนถึงเทา คุณสมบัติของผ้าไหมและผ้าฝ้ายที่ผ่านการทำออร์แดนท์และย้อมสีจะมีความคงทนของสี
ต่อการซักล้าง ต่อเหงื่อ และต่อน้ำอยู่ในระดับดี ถึงดีมาก แต่จะมีความคงทนของสีต่อแสงและต่อการ
ขัดถูอยู่ในระดับปานกลางถึงดี

หลักสูตร ปริญญาโทและวิทยาศาสตรมหาบัณฑิต
สาขาวิชา ปริญญาโทและวิทยาศาสตรมหาบัณฑิต
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ลายมือชื่อผู้จัดทำ
ลายมือชื่ออาจารย์ที่ปรึกษา
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RATTANAPHOL MONGKHOLRATTANASIT : DYE EXTRACTION FROM EUCALYPTUS LEAVES AND BARK AND APPLICATION FOR SILK AND COTTON FABRIC DYEING.

THESIS ADVISOR : Assoc. Prof. Tharapong Vitdsant, Ph.D., THESIS COADVISOR : Chanchai Sirikasemlert, Ph.D., 90 pp. ISBN 974-17-1942-6

This research was concerned with dye extraction from the leaves and bark of eucalyptus. The best suitable condition for extraction was at 100 degree celsius for 1 hour and liquor ratio of material: solvent was 1:40. Extraction with distilled water gave the maximum percentage of total solid. The suitable condition for pre-mordanting process on silk and cotton fabric was at 30 degree celsius for 10 minutes with mordant compounds 0.1 %owf.

Silk and cotton fabric were treated with pre-mordanting process before dyeing experiments, in order to facilitate dye absorbancy of fabric such as silk dyeing at 90 degree celsius for 40 minutes, cotton dyeing at 60 degree celsius for 40 minutes. The best result was achieved when liquor ratio between fabric and dyed solution as 1:30 was employed. Silk dyed in the solution extracting from the leaves and bark of eucalyptus with mordant compound displayed yellow - brown colour except fabric using ferrous (Fe) mordant exhibiting the shade of dark grey. For cotton, shade of yellow – orange was obtained, except fabric using ferrous (Fe) mordant displaying the shade of pale grey - grey. Silk and cotton fabrics treated with pre-mordanting and dyeing process has presented the properties of colour fastness, washing, water and perspiration in good to very good level whereas colour fastness to light and rubbing was in fair to good.

Program Petrochemistry and Polymer Science

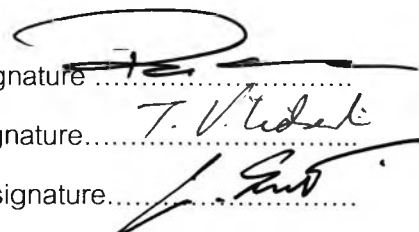
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LIST OF ABBREVIATIONS

| | |
|-----------------|---|
| Al or Aluminium | Potassium aluminium sulphate |
| a* | Red – Green |
| b* | Yellow – Blue |
| °C | Degree Celsius |
| Cu | Copper |
| Cm | Centimeter(s) |
| cm ³ | Cubic centimeter |
| D65 | Daylight (Colour temperature at 6700 K) |
| Fe | Iron |
| g | gram(s) |
| g/l | gram/litre |
| ISO | International Organization for Standardization |
| kg | Kilogram(s) |
| kPa | Kilo Pascal |
| K/S | Kubelka – Munk equation |
| L* | Lightness |
| L:R | Liquor ratio |
| min. | Minute(s) |
| mm. | Millimeter(s) |
| N | Normality |
| owf | On weight fabric |
| lb. | Pound(s) |