The 4th RMUTP International Conference: Textiles & Fashion

3-4 July 2012, Pullman Bangkok King Power, Bangkok, Thailand

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INTRODUCTION

ASEAN Free Trade Area (AFTA) and ASEAN Economic Community (AEC) play an important role in economic changes in ASEAN especially in the fields of industrial textiles, garment and fashion. Rajamangala University of Technology Phra Nakhon has realized this issue; therefore, the 4th RMUTP International Conference is hosted on 3-4 July 2012 at Pullman Bangkok King Power Hotel. The conference provides a great opportunity to bring together scientists, scholars, students from academia and industry all over the world to exchange experience, discuss cooperation and poster presentations are encouraged researchers to present work-in-progress or significant work on topics relevant to textiles and fashion.

"Textiles & Fashion," the theme of this year's conference focuses on "Textile Technology & Innovation," "Textile Chemistry & Finishing," and "Eco-Textiles & Fashion Design". Our co-host for this event will be the Technical University of Liberec from the Czech Republic and feature some seventy foreign and thirty- five Thai participants. This conference has three keynote presentations on the topics of Textiles & Fashion: Future Trends in Textile Branch" by Prof. Ing**.** Jiří Militký (Czech Republic), "Trend Forecasting" by Prof. Veronica Bogao (Italy) and "Trends in Technical Textiles" by Prof. Ing. Syaed Ibrahim (Czech Republic).

RMUTP's 4th International Conference looks set to be one of our best ever, and congratulates all of you who have worked hard on making it such a successful project.

With warm regards,
Conference organizers
Rajamangala University of Technology Phra Nakhon
International Conference: Textiles and Fashion
3-4 July 2012

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ABOUT

RAJAMANGALA UNIVERSITY OF TECHNOLOGY PHRA NAKHON (RMUTP)

RMUTP was established on 27 February 1975 when the "Vocational Education and Technology College" Act was announced on the Royal Gazette and came into force. The Act aimed to create vocational teachers with a bachelor's degree to teach vocational education at vocational level, undergraduate level and advanced vocational certificate level. The Act also intended to promote vocational research activities and provide technical services to the communities. Over the years, the Vocational Education and Technology College had developed its teaching techniques, produced quality graduates and provided excellent services to the society. It was not until 15 September 1988 when HM the King granted a new name to the college, which then came to be known as the "Rajamangala Institute of Technology".

With the National Education Act, B.E. 2542 (1999) aimed to decentralize management in education institutes to make them more independent and flexible to handle their own affairs under the university council, Rajamangala Institute of Technology subsequently amended the law governing the institution at that time before enacting it as the "Rajamangala University of Technology Act," which HM the King signed on 8 January 2005.The law, announced in the Royal Gazette ten days later before coming into effect on 19 January 2005, combines all campuses nationwide into nine Rajamangala University of Technology ; namely, RMUT Thanyaburi, RMUT Krungthep, RMUT Tawan-ok, RMUT Phra Nakhon, RMUT Rattanakosin, RMUT Lanna, RMUT Srivijaya, RMUT Suvarnabhumi and RMUT Isarn. The intention is to turn these nine universities into science and technology university offering advanced vocational training in undergraduate and graduate levels to accommodate vocational students and to provide education opportunities to those graduated from community colleges. The integration is aimed to provide an opportunity for students to continue

vocational study at the undergraduate level. All nine RMUT have been under the supervision of the Office of Higher Education Commission, Ministry of Education.

With regard to RMUT Phra Nakhon or RMUTP in short, the university is composed of five campuses; namely, Thewes Campus, Chotiwet Campus, Bangkok Commercial Campus, Chumporn Khet Udom Sak Campus and North Bangkok Campus. RMUTP offers programs in 9 Faculties: Industrial Education, Home Economics Technology, Mass Communication Technology, Business Administration, Science and Technology, Engineering, Liberal Arts, Architecture and Design and Industrial Textiles and Fashion Design at advanced vocational certificate level and undergraduate level. RMUTP also offers Business Administration, Industrial Education and Home Economics Technology, Engineering, Mass Communication Technology at graduate level. At present, RMUTP has more than 13,000 students.

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TECHNICAL UNIVERSITY OF LIBEREC (TUL)

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The history of the Technical University of Liberec goes back to 1953 when the Technical Collage of Mechanical Engineering was established. The foundation of the University was a logical result of the long-term economic and cultural development of the region where textile and textile machinery products had been traditional. From the start, the College offered academic programmes in areas of Mechanical Technology, Design and Construction of Textiles, Glass and Ceramics Machinery etc. The first Halls of Residence and University refectory were constructed between 1955 and 1960. In 1960, the Collage was divided into two faculties: the Faculty of Mechanical Engineering and the Faculty of Textile Engineering. Between 1990 and 1995, another four faculties were founded: the Faculty of Education (in 1990), the Faculty of Economics (1992), the Faculty of Architecture (1994), the Faculty of Mechatronics and Interdisciplinary Engineering Studies (1995) and the Institute of Health Studies (2004).

Today, the University has an enrolment of more than 7,000 full-time student in six faculties and one institute:

Faculty of Mechanical Engineering
Faculty of Textile Engineering
Faculty of Education
Faculty of Economics
Faculty of Architecture
Faculty of Mechatronics and Interdisciplinary Studies
Institute of Health Studies

A wide range of academic programmes is offered at all levels, leading to the following degrees:

Bachelor of Arts
Bachelor of Science
Master of Arts
Master of Science
Doctor of Philosophy

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Textiles &
FASHION
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CONTENT

CONTENT

CONTENT

CONTENT

CONTENT

CONTENT

CONTENT

CONTENT

CONTENT

CONTENT

SECTION III
ECOTEXTILE & FASHION DESIGN

CONTENT

CONTENT

SECTION III
ECOTEXTILE & FASHION DESIGN

CONTENT

CONTENT

SECTION III
ECOTEXTILE & FASHION DESIGN

CONTENT


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Acoustic Dynamic Modulus of Staple Yarns

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Abstract: Studies of the fundamental dynamic mechanical properties of textile products are of prime importance if improvements to textile-processing equipment are to characterize textile structures. The acoustic or sonic pulse-propagation technique for the measurement of dynamic elastic modulus has the advantage of not being dependent on the sample cross-sectional characteristics. This technique also gives a direct measure of modulus rather than the indirect measure in the form of load versus extension. The sonic tests are relatively simple to apply and are nondestructive. The values of sonic modulus of fibrous structures are dependent on the orientation of components and packing density as well. Let us assume that the staple yarn is composed of thin, elastic cylindrical rods with dynamic modulus E and densityρ. The longitudinal sonic waves propagation is investigated. The rate of these waves spread *c* is computed from well-known relation $c = \sqrt{(E/\rho)}$. The acoustic dynamic modulus of yarn is much lower than acoustic dynamic modulus of fibers (corresponding multiplicative factor is in the wide range from 0.05 to 0.6). The decrease in acoustic dynamic modulus of yarns is influenced by the twist level mainly. From the acoustic dynamic modulus of yarns Ey at some twist level Z it is possible to calculate the approximate orientation factor m the acoustic dynamic modulus of yarns Ey at some twist level Z it is possible to calculate the approximate orientation factor. The main aim of this work is to quantify effect of yarn twist on the sonic modulus of staple yarns from synthetic and blended cotton type yarns. The results are compared with selected models of yarn twist influence on the mechanical properties of staple yarns. The correlation

between yarn orientation factor defined by Pan and sonic modulus will be shown. The sonic modulus of yarns will be compared with tensile modulus.

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SECTION I

A Study on Optimum Twist in Cotton Roving Based on Fibre Properties & Roving Hang

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Abstract: The report deals with a study conducted by SITRA to determine optimum twist in roving.Yarns spun using different twists in roving and with different roving fineness were tested for 0.5 percentile values of yarn strength. The yarns were also tested for infrequent yarn faults and count variation. Based on the results, an empirical formula to determine optimum twist in roving has been derived. Trials were also conducted to determine the quality attributes of yarn spun using rovings at different doff stages of the roving bobbin.

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SECTION I

An Investigation of Electromagnetic Wave Absorption Potential Of Woven Fabrics With Stainless Steel Wire

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Abstract: The growth of the electronic industry and the widespread use of electronic equipment in communications, computations, automations, biomedicine, space, and other purposes have led to many electromagnetic interference (EMI) problems as systems operate in close proximity. The rapid development of advanced electronic devices and applications has brought with it a growing interest in electromagnetic wave-absorbing materials. Many commercial and military applications, such as data transmission, telecommunications, wireless network systems, and satellite broadcasting, as well as radars, and diagnostic and detection systems, utilize and emit electromagnetic waves. In recent years, electromagnetic (EM) waves in the 1–10 GHz range are broadly used in wireless communication tools and local area networks. In the future, the usable range of EM waves will tend to shift further to higher frequency regions with the development of information technology as well as electronic devices. As a consequence, the seriousness of problems such as EMI of electronic devices and health issues is ever rising. This article investigates the electromagnetic wave-absorbing properties of stainless steel wire containing woven fabrics. Electromagnetic wave absorbing properties of woven fabrics consisting of yarns, which are made of finest stainless steel, wires and cotton fibers were fabricated by using the ring spinning methods. The woven fabrics with the same warp density but variable weft density were produced at the sample-weaving machine. Effect of the weft density and pattern

on electromagnetic wave absorbing properties were investigated A coaxial transmission line method specified in ASTM D4935-10 was utilized to test the woven fabrics and the tests were carried out in the frequency range from 15MHz to 3000 MHz.

Keywords: Electromagnetic shielding, electromagnetic wave absorbing, metal wire, weaving, woven fabric.

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SECTION I

An Investigation on the Tensile Properties of Soybean Blended Yarn

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Abstract: Concerns for the environment and consumer demand are driving research into environmentally friendly fibers as replacements for part of the 38 million tonnes of synthetic fiber produced annually. With the growing demand for more comfortable healthier and environmentally friendly products, efforts in research and development activities in the textile industry focused on the utilisation of renewable and biodegradable resources. In this respect, a new of regenerated fiber namedsoy bean protein fiber have gained importance in textile (1). Regenerated soybean protein fiber is obtained from soybean which is abundant and cheap natural resource. The soybean protein fiber has many of good qualities of natural fibers and synthetic fibers like good warmth retention and better moisture transmission than cotton. New fiber has high strength properties, high modulus with low shrinkage in boiling water, reasonable wet permeability, good moisture transmission (3,4). Soybean protein fiber and its products shows the lustre of real silk ; and its drapeability is very good (3). In this study, soybean blended yarns' tensile properties were investigated with the same yarn count and twist coefficient. Soybean yarns tensile properties were measured for determining the blending fiber effect on the yarn properties. The results from these tests were statistically analyzed and evaluated.

Keywords: Soybean yarn, blended yarn, yarn tenacity

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Characteristics and Properties of Hibiscus Tiliaceus Yarn

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Abstract: This research was investigated the physical properties of fiber and yarn of Hibiscus- tiliaceus and also. traditional spinning process. The results found that the fiber strength and fiber length were 13–16 Newtons and 5–10 centimeters, respectively. The yarn number strength and twist per unit length were 903–1045 tex, 97–108 Newtons and 3.2– 4.7 twist per inch, respectively. The chemical dissolved and long–cross section properties were also studied.

Keywords: Fiber, Yarn, Hibiscus tiliaceus, Physical Properties

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SECTION I

Characterization and Properties of Nypa Fruticans Wurmb Fiber

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Abstract: Characterization and properties of Nypa Fruticans Wurmb fibers studied of physical properties ofthe fiber. The comparison processes of scouring and non-scouring fiber which the characterize ofthe different types of fibers. The physical properties to according to ASTM standard test methods. The results found that; the characteristics of cross section was similar to linen andhemp, while the long section was uneven and scratched. Finally, the physical properties showed;the scouring fiber was the highest strength 18.3 N and the extension was 51.5 %.

Keyword: Characterization and properties, Nypa Fruticans Wurmb, Scouring, Natural Fiber,Cellulose fiber.

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Characterization of Yarn Diamter Measured on Different

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Abstract: Yarn diameter is an important determinant of many fabric parameters and properties e.g. cover factor, porosity, thickness, air permeability, fabric appearance,.. etc. There are many methods based on different types of sensors used for characterization of yarn unevenness. These instruments differ in the principle of measuring and the logic of evaluation of yarn irregularity. It is essential to investigate more deeply which of these methods is more reliable and to establish a relationship between the results obtained from different techniques. Uster tester 4 equipped with the optical sensor OM, Lawson Hemphill YAS system, Quick Quality management QQM3, were used in this study. Optical microscope has been also applied using cross sectional method and longitudinal method for evaluation of yarn diameter. The present investigation focuses on analysis of the data obtained from these commercial instruments as a stochastic process. It was found that a bimodal distribution can be applied to characterize the yarn diameter. The D-yarn program developed also supports this fact and deliveries much information about the characteristics of yarn diameter. Beside many other techniques, the autocorrelation function, spectrum analysis and fractal dimension was used.

Keywords: Yarn irregularity, stochastic process, time series, bimodality, autocorrelation function, spectrum, fractal dimension.

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Development and Characterization of Woven Orthopaedic Casting Tape

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Abstract: Orthopaedic casting tapes are fabrics coated with curable resin which provide immobilization to broken bone. Today many orthopedic casting tapes are available in the market which includes conventional casting tape i.e. Plaster of Paris cotton bandages and synthetic cast i.e curable resin coated tapes. Plaster of Paris bandages are used from a long time due to its good moulding property and weight bearing property. But it has some disadvantages like heavy weight, low strength to weight ratio, non-breathability of POP cast, longer setting time, deterioration of cast with water, etc. The next invention in this area is the polyurethane coated bandages. They are superior to POP bandages in all terms. Commercially fiberglass based fabric has been used as the substrate of this tape but the long term use of fiberglass is harmful for skin as fiberglass can produce scar on skin. The main aim of this project is to develop such a cast which is made by a comparatively safer high modulus fiber and also economically at par with fiber glass. The idea is to develop such a casting tape which consists of the beneficial properties of plaster of paris casting tape and polyurethane coated casting tape; it will have a high strength to weight ratio, transparency to X rays i.e. radiolucency, a smooth surface after curing of resin. For achieving our ultimate aim we have compared the performance of conventional Plaster of paris based tape and synthetic tape. We have set some parameters for the optimum cast strength which includes fabric as well as chemical composition parameters. Then we have chosen polyester multifilament yarn for making the woven substrate. We prepared 6 woven samples with weaves plain, mockleno and huckaback with different areal density. Then we applied water curable polyurethane resin (ASTM type II) on the woven substrate. Then we have tested its diametrical compression resistance. It was found that all the fabric parameters except the openness of fabric were achieved. The maximum diametrical compression resistance was achieved with

huckaback structure. We are preparing leno structure also as it gives openness with dimensional stability. Some knitted structures are also developed to compare the woven and knitted structures. The process of optimization of chemical composition is also carried out.

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SECTION I

Development and Processed Products from Lemongrass Fibre

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Abstract: This research deals with paper production from lemongrass and producing a model product. The lemongrass was boiled in sodium hydroxide solution 400 grams per litre of water at 80 – 100 degrees Celsius for 3 hours. The separated fibre was then bleached with chlorine solution 20% per lemongrass fibre 1 kilogram per water 1 litre. Finally, paper pulp was scooped for paper formation and lemongrass fibre paper was soaked with flame retardant 10% for 10 minutes at room temperatures. The physical properties of the paper were tested–mass per unit length, longitudinal and cross section, burn, tearing strength, absorption, and heat resistance. This research was conducted by cutting lemongrass leaves to a uniform length, boiling them to separate the fibres for toughness with high strength: the longer the lemongrass leaves, the greater the strength. The dirt mixed was removed by boiling the separated fibre. To achieve quality standards the products should be designed, analyzed, evaluated, and modeling. Sampling group evaluation were used to help develop lemongrass fibre products for commercial production using natural resource with maximum cost benefit and technology transfer to the target group. The result of this research was to develop and process home furnishing accessories and souvenirs such as lamps, photo frames, paper boxes, tissue box, and souvenirs. The procedure for this research was to analyze the satisfaction level of trainees from Sridonpai, Dumnoen Saduak District, Ratchaburi community and interested groups amd found that the service provided by officer, trainer, service processing, and accommodation were on average of high level ($\bar{X}$= 4.45, 4.35, 4.22, and 4.42 ordering)

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Development of E-Health Monitoring Garment

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Abstract: SMART fabrics and interactive textiles are conceived as innovative textile structure integrating sensing, actuation, electronic and power and/or communication functions. Due to their multifunctional interactivity enabled by wearable devices these are flexible and comfortable to the human body. E-textiles are considered relevant promoters of a higher quality of life and progress in biomedicine as well as in several health-focused disciplines such as bio monitoring, rehabilitation, telemedicine, ergonomics and sports medicine. New promising research recently emerged from the miniaturization of electronics and informatics (computers, micro sensors, signal processing, transmissions etc.) making possible the integration of multiple smart functions into textiles free from any impediment. An attempt has been made to prepare a cloth which could be comfortably worn and is efficient to incorporate different circuits as per requirement. Copper wound yarn was introduced to make fabric conductive in the weaving workshop. Different experiments were performed to make the fabric conductive without any deterioration of the yarn.

Keywords: Smart fabrics, e-textiles, copper wound yarn

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Dynamic In-Situ Measurements of 3D Composite Material Mechanical Constraints During the Weaving Process.

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Abstract: Aircraft industry, in particular the motorists, have to answer the new environmental requirements fixed by the worldwide authorities. One of the main response is to decrease the weight of planes, particularly in some critical moving parts like the engines, in order to reduce the fuel consumption. New generation of aircrafts have to replace some steel or aluminium parts by composite materials with the same resistance with a lower weight. These composite material need to be safe and proved their performance all along the lifetime of aircraft. Thus, composite materials using fibrous reinforcement have to check all along the manufacturing process. The solution chosen of our project is to substitute these laminated structures by multidirectional ones, especially 3D warp interlock fabrics. The purpose is to get a deep knowledge of these structures from the very first stage of weaving process and check their final geometry and mechanical performance. Local constraints on yarns during the weaving process can be measured thanks to in-situ measurements provided by instrumented sensor yarns specifically developed in the Gemtex Laboratory. Different kind of technique has been used to designed and produced these specific sensor yarns. From different previous research works [1][2], a new conductive coating has been developed to produce an accurate sensor yarn. In this paper, the main issues are the size reduction of the yarn sensor, the abrasion resistance due to yarn to yarn friction and the adapted instrumentation for dynamic measurements. For those purposes, at a first step, the chemical formulation has been improved, as well as the process of coating itself, to allow better accuracy all along the sensor yarns. In a second step, the whole acquisition system has to be newly designed to allow safe and accurate in-situ measurements while

recording sensor motion without stopping or even interfering with the weaving loom work. Prototypes of sensors have already proved good capability such as: good repeatability of measurement, sensitivity to elongation and compression, and noise resistivity.

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Effect of Different Conductive Yarns on Heating Behaviour of Fabrics

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Abstract: In recent years, various novel and practical products have been emerged by the rapid development in science and technology in order to meet human demands. By textile science incorporating with electronic industry, Textile products developed are taking part in different areas including industry, military, space, medical in order to perform needing for health, protection, defense, communication and automation. In this study, conductive yarns which are the base of e-textiles are examined. Conductive yarns in the fabric give out some heat according to rising voltage. The amount of heat differs according to type of conductive yarn and construction of fabric and the base yarn of the fabric. The given out heat must not affect the comfort of the people who wear these clothes in their daily lives and also must not give any damage to the other yarns that are used. 30 different woven fabrics are produced with 8 different conductive yarns, 2 different base yarns and 3 different weave designs. DC power supply is connected to the conductive yarn of the fabric and voltage is increased one by one and thermal photos of each voltage is token by thermal camera.The amount of temperature at each point of the fabric and maximum temperature are determined. With the help of TestoIRSoft sofware program thermal photos are examined and the best fabric construction is determined according to this results. Achieved results will guide incoming e-textile applications and mostly will help to ignore the problems that may develop afterwards like; melting of based yarn of the contruction of fabric and damaging the regional parts of the body because of heat given out.

Keywords: Electronic textiles, heat manner, conductive yarns.

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Effect of Needle Diameter on Diameter of Electtropsun Silk Fibroin Nanofibers

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Abstract: Electrospinning is a process that creates nanofibers through an electrically charged jet of polymer solution or polymer melt. The process is governed by many parameters, classified broadly into solution parameters, process parameters, and ambient parameters each of which plays a significant role in determining the morphology and diameter of electrospun nanofibers. As their diameters decrease, nanofibers offer more performance advantages in many fields such as tissue engineering, protective clothing, filtration, biosensors, affinity membranes, enzyme immobilization, energy storage and generation etc. due to the higher surface area-to-mass ratio. Thus, the value of the technology lies in the smallest fiber diameters that can be fabricated and manipulated under practical conditions. In order to be able control the process and to have a control on fiber diameter, it is important to investigate the parameters that influence it. With greater understanding of the parameters it may be possible to have a greater control over the resultant fiber diameter and depending on the application, fibers with different diameters can be produced by using specific parameters. There are many studies in the literature investigating the solution parameters and process parameters such as applied voltage, flow rate and tip to collector distance. In this study, an attempt was made to produce uniform, continuous and nanoscale fibers from silk fibroin (SF) by electrospinning and to investigate the effect of needle diameter on the resulting electrospun SF average nanofiber diameter after optimizing the electrospinning parameters. The effect of needle diameter on the resulting electrospun SF average nanofiber diameter was investigated for four different needle gauges. The resulting nanofibers were analyzed by scanning electron microscopy (SEM) and

statistically significant decrease in nanofiber diameter was observed in response to the decrease in needle diameter.

Keywords: electrospinning, nanofiber, diameter, needle, silk fibroin

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SECTION I

Functional Characterization of Fiber Reinforced Nanocomposites

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Abstract: This work presents an insight into the effect of preparation procedure and the filler content on functional properties of glass fabric reinforced nanocomposite systems. For the preparation of nanocomposites, unidirectional glass fabrics were used. Methyl siloxane was used as resin in the study. As fillers, carbon black (CB) nanoparticles having size less than 50 nm were used. The characterization of nanocomposites was done using Dynamic Mechanical Analysis (DMA), Thermal Mechanical Analysis (TMA) , Impact testing, Tensiletes ting, Thermal conductivity and electrical conductivity measurements. The morphology of composites was characterized by Scanning Electron Microscopy (SEM). The thermal conductivity of the composite was measured by Differential Scanning Calorimetry (DSC) and Alambeta thermal conductivity tester. The electrical conductivity was measured by 2 electrode probe method. The dependence of heat flow Q, thermal expansion coefficient, α, the dynamic mechanical parameters, E', E'', tanδ, T_g, thermal and electrical parameters (λ, R and ρ), impact energy are associated with the filler content and is controlled by the employed curing conditions. Experimental results show that some functional properties can be enhanced by the incorporation of nanoparticles.

Keywords: Nanocomposite, glass fiber reinforcement, thermo mechanical analysis, knife penetration, electrical resistivity

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Investigation of Basic Yarn Parameters Influencing Formability Behavior of Cotton Shirting Fabrics

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Abstract: Formability of fabric is one of the cardinal parameter that determines the Total Appearance Value (TAV) of fabrics; it is related to maximum compression sustainable by a fabric before the onset of buckling. Formability behavior of a fabric structures is determined by low stress mechanical properties viz. bending rigidity and in plane compressional resistance. Poor formability leads to develop compression force that creates puckering at seams and affects the drape and shape retention characteristics of finished garments. Extent of puckering is mostly determined by fabric designed specifications and yarn parameters. In woven fabric structures apart from fibre properties and fabric specifications, yarn linear density influence bending rigidity of a fabric which in turn affects the fabric formability. Higher twist in yarn makes yarn stiffer and thereby increases the same. Inplane compression resistance of fabric is also depending on number plies in spurn yarns. The present paper discusses the effect of various yarn parameters viz. count, twist, doublings on formability characteristics of cotton woven shirting fabrics. 100% cotton woven fabrics of varying yarn linear densities and number of plies were produced. The formability characteristics were determined using KESF evaluation system. It was interesting to note that the formability is found to be higher for shirting fabrics produced from plied yarns than that of single yarns of same linear density.

Keywords: Formability, Total Appearance Value (TAV), Bending rigidity, Inplane compression resistance

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Investigation of Electromagnetic Shielding Properties of Boron and Carbon Fiber Woven Fabrics and Their Polymer Composites

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Abstract: Using of electronic devices increased by the development of the technology. Electronic circuits of these electronic devices diffuse electromagnetic energy and this energy effects human in negative way. Recently, the prevention of electromagnetic waves is an important subject. Prevention of electromagnetic waves is also important for defence and telecommunication sectors. In this study electromagnetic shielding (EMSE) properties of boron and carbon fibre plain woven fabrics and their polymer composites were investigated. Shielding properties were performed between 15 MHz and 3000MHz by coaxial transmission-line method according to ASTM-D 4935-10. Boron and carbon fibre fabrics and their polymer composites show different shielding properties in different frequency band.

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Investigation of Mechanical Properties of Treated Ready Made Grament Waste Reinforced Polymer Composited

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Abstract: Textile waste consists of by-product materials from the textile, fiber and cotton industries. Each year 750,000 tons of this waste is recycled into new raw materials for the automotive, furniture, mattress, coarse yarn, home furnishings, paper and other industries. In this study cotton/polyester ready made garment waste fibres were treated with NaOH in different concentrations (5%, 10%) and polymer composites were produced from these treated cotton/polyester fibres by using thermoset resin. Then mechanical properties of treated cotton/polyester polymer composites were investigated.

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Investigation of Slendering on Coarse Wool Fiber and its characteristics

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Abstract: In this research the influence of slendering on coarse wool fiber which then improved by m-TGase treatment was studied. The coarse wool fiber was first treated by reducing agent then it was stretched at different conditions over various periods of times and temperatures and finally steam set. The wool fibers were then tested for some mechanical and physical properties. To overcome tenacity loss of the fibers as a result of slendering treatment, after–treatment with microbial trans-glutaminases was examined. The results show that the fineness of the fiber was improved about 17 % but the tenacity decreased about 15%. XRD analysis show that the degree of crystallinity related to stretching ratio and this increasing of stretching alters the degree of crystallinity. SEM shows that the cuticle of the treated samples causes excessive damage and the reducing agent can affect on wool surface. Furthermore, alkaline solubility was increased by reduction treatment, but m-TGase can compensate a little. The fiber yellowness was significantly decreased after slendering.

Key words: XRD, crystallinity, m-TGase Enzyme, yellowness, alkaline solubility, coarse wool, slendering.

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Investigation of Sound Absorbance Properties of Formic Acid Treated Luffa Fibres

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Abstract: Formic acid is widely used to clean the cellulose fibres. Ultrasonic and microwave methods are new methods for textile wet processes and they have some advantages such as low energy requirement and fast process duration. In this study, luffa fibres were treated with formic acid by using ultrasonic and microwave methods. After treatment, sound absorbance properties of the luffa fibres were investigated.

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Medtex Project – A Smart Textile Solution forThe Prophylaxis of Pressure Ulcers

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ABSTRACT: Pressure ulcers are skin lesions that affect seriously the patient's quality of life. This pathology is caused by low pressure application during a long period of time over boner preeminence or, in another way, high pressure application for a short period. This paper describes the initial prototype of a textile based technological solution to perform real time control of the anatomical position of bedridden patients suffering from pressure ulcers. For this purpose the authors developed an elctrotextile system with an integrated sensing layer that captures the anatomical position of the body along time and communicates with a PC to inform healthcare personnel about the necessity of changing and pressure relief.

Key words: Pressure ulcers; prophylaxis; Smart Textiles; Electrotextiles; Remote Sensing; Medical Textiles;

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New 3D Textile Composite Protection Against Armour Piercing Ammunitions

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Abstract: Weight and performance are the most important parameters in the ballistic Protection. A combination of ceramic tiles and textile composite shows good results as an anti-ballistic material against armour piercing (AP) threats [1]. However, many textile structures can be used as a backing solution. 3D textile structure have already been used and have proven their efficiency [2]. However, a combination of textile structures seems to increase the protection performance at the same weight. Thus, a new Textile composite protection has been designed, produced and tested with two different AP Ammunitions: 7,62mm and 12,7mm. The armour was able to stop all the 7.62mm AP bullets (Figure 1) but not the 12.7 mm AP threat (Figure 2). Ceramic tiles used for the armour appears to be not enough resistant for the 12,7mm AP ammunition.

Figure 1: No perforation of all the 7.62mm AP bullets on the 3D Textile composite protection.

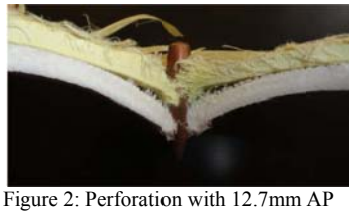

Figure 2: Perforation with 12.7mm AP ammunition through the 3D Textile composite structure.

Concerning the 7,62mm AP threat, a new textile solution combining aramid and High Modulus Polyethylene fabrics for the armour has been found, a bit lighter than the previous solutions [2], but above all; cheaper and faster than using only 3D warp interlock fabric.

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New 3D Warp Interlock Composite for Armouring of Vehicles

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Abstract: Since the apparition of new non-conventional threats on the battlefield, armoured vehicle manufacturers tend to reduce the mass of protective components and increase their efficiency by combining well-known ballistic alloys and textile composite materials [1]. Some studies have been led in order to improve those textile backing composites (fibrous reinforcement parameters, resin and process). Nevertheless, new threats as high velocity projectiles (from 1000 to 2000 m/s or more) required more effective protection solution. In order to improve the impact behaviour of the vehicle's armouring protection, two different kinds of 3D warp interlock composite submitted to high speed impact tests have been achieved [2]. The first one is a classic 2D laminated composite (figure 1), made of several pre-impregnated fabrics (yarns of 3360dTex linear density) thermo-assembled under pressure, which are widely used in hard ballistic protection. The second type of backing is a 3D warp interlock fabric composite (figure 2) (yarns of 3360dTex linear density) infused under high pressure. The main characteristic of those fabrics is their unusual bonding between plies done by the specific evolution of warp yarns through the 3D fibrous structure.

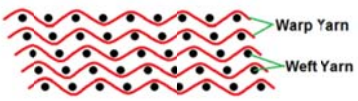

Figure 1: Sectional view of a 2D laminated

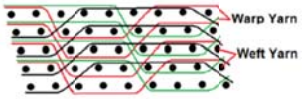

Figure 2: Sectional view of the 3D warp interlock composite

Ballistic tests confirm that 2D fabrics composite and 3D fabric composite have a different behaviour under the same impact. 3D fabrics present a new interesting mechanical response suited for the reduction of intra ply delamination.

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Numeric Modelling of The Weaving Process for Textile Composite

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Abstract: we have to predict its geometry and its mechanical properties. NUMTISS project aims to develop a model for composite production, from the weaving process until the resin infusion. Carbon fibres are damaged during the weaving process which leads to mechanical strength losses of the fabric. The purpose of this study is to develop a numerical model of the deformation of the yarn and the fabric in order to detect these damages (shocks and delaminations). The existing software for modelling fabrics are only used for a geometrical modelling of the free structure without resin. NUMTISS contribution is from getting dry fabric structure, by "reproducing" numerically the weaving process. The expected advantage is a precise geometrical modelling of the modified structure without resin. Especially, a sharp knowledge of the mechanical fields from the pre-stressing dry structure and ideally modelling yarns damages. For the numerical modelling of the weaving process using finite element analysis method, we considered all elements like rigid solid and we will make the hypothesis that yarns are transverse isotropic materials. We will simulate in first the process for a plain weave fabric and in a second time the process for a 3D warp interlock structure. Geometrical modelling of the loom on Solidworks and transfer of the geometry on Radioss (FEA) have already been performed. In parallel, the tracking of the loom parts motion of some strategic elements on the industrial weaving loom (reed, heddles, rapier,..) have been carried out. The tracking obtained with the video of the high speed camera will help us to verify the cinematic of the numerical model.

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Poly (ε-Caprolactone) / Nanoclay Nanoiber Mat as A Novel Scaffold for Tissue Engineering

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Abstract: Tissue engineering is a new approach regenerating lost or damaged tissue. Poly(ε-caprolactone)(PCL) is a biodegradable and biocompatible polymer that has been successfully electrospun but it has some disadvantages for tissue engineering. Nanoclay is modified layered silicate. These nanoparticles may be dispersed into the polymer solution, which is then electrospun to form nanocomposite fiber. This study is aimed at investigating the fabrication of PCL/nanoclay nanofibrous and the effects of nanoclay on PCL nanofibrous scaffolds. PCL and PCL/Cl30B nanofibrous scaffolds were provided by electrospinning method. Conductivity and viscosity of each solution were measured. The morphology of electrospun pcl-nanoclay nanofibrous were observed by SEM. Comparison of fiber diameter distribution between pcl and Pcl/Cl30B nanofiber revealed a decreased nanofiber distribution (130-370 nm vs 40-200 nm), suggesting the addition of Cl30B solution resulted in a thin nanofiber diameter distribution. In the other words, increasing the clay content of the electrospun nanofibers resulted in the production of more fine fibrous structures. This observation could be attributed to the increase in electric conductivity and viscosity of the solution caused by the addition of inorganic clay. Biodegredability of the nanocomposite mat were also studied. It was shown that nanoclay improves biodegradability and cell viability due imparting a higher hydrophilic properties into the nanofibers.

Keywords: Nanoclay, Tissue engineering, Biodegradable, nanofiber

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Tearing Behaviour of Fabric Using Various Testing

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Abstract: For a textile product, its serviceability is often likely determinates by the physical performance. Among various kinds of physical behavior, tearing and tensile are two main domains of interest of research. However, only rupture caused by tearing is much more closely related to real life usage. Previous researches and studies all showed that tearing of textile is a complicated phenomenon. In this paper, ISO standards 13937 part 1 to 4 was used for determining of tear force of fabric samples. The Elmendorf, Trouser, Wing and Tongue tear were used for testing chosen fabrics. The results of each test were compared and it was found that no abrupt variation of results of the same fabric obtained from each type of the test can be seen.

Keywords: fabic, tearing strength, serviceability

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Teleintmation Garment: A wearable Electronic Garment for Soldier's Status Monitoring Applications

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Abstract: This paper develops and demonstrates technologies useful for implementing a manageable cost effective systems approach to monitoring the medical condition of personnel by way of an instrumented uniform hereafter referred to as Teleintimation Garment (TG). The TG consists of a form fitting garment which contains and interconnects sensing elements and device to an electronics pack containing a processor and transmitter. The TG prototype requires fiber, textile, garment and sensor development. The TG consists of a mesh of electrically and optically conductive fibers integrated into the normal structure of fibers and yarns selected for comfort and durability. A suite of Teleintimation garment compatible embedded biological and physical sensors are then integrated into the TG. The initial TG sensor suite is selected to improve triage for combat causalities.

Keywords: Bullet impact detection, POF Fabric, Teleintimation Garment, Wearable Electronics

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SECTION I

The Effect of Fiber Diameters on the Mechanical Properties of Fiber Reinforced Composites

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Abstract: Textile structures are being used for the reinforcement of composites in several industrial applications. There are different types of textile structures which are used as reinforcement like nanofibers. The increasing usage of composites, besides the growing attraction to nanofibers, have led the study to investigate the impact of fiber diameters – ranging from micro to nano– on the mechanical properties of fiber reinforced composites. First, we changed different parameters of process such as flow rate, needle-to-plate distance, applied voltage and variation in polymer concentration to optimize conditions for producing fibers in the range of 100 nanometer to 2 micrometer and investigated the influence of changes of each, on the considered result. We used SEM images for measuring fiber diameters. Image processing method has highly utilized in the measurement of fiber diameters recently, suffer from the error in fiber diameter measurement in junctions. In order to overcome the trouble, SEM images were cropped then each fiber diameter was measured individually with an accurate method. Obtaining results from image processing method were first compared with simulated images and then with the real web images. It has been concluded that schedule procedure was accurate and reliable. In addition, the composites were made by Epoxy matrix. Finally, the tensile property of composite samples was measured and as a result, the effect of fiber diameters on the tensile properties was reported.

Keyword: Fiber reinforced composites, Fiber diameter, Tensile properties

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The Effect to Electromagnetic Shielding of the Thickness of the Needle Punched Nonwoven Fabrics

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Abstract: Effect to electromagnetic shielding of fabric thickness parameter was investigated. The nonwoven technology, carding and needle punching machine and staple steel/polyester fibres were chosen as a type of fabric, manufacturing method and raw materials. As it is easy to produce a fabric from fibres to fabric and there is an opportunity producing fabric with voluminous and different thickness, the nonwoven fabric producing technology was preferred. In the experimental study, Bekaert stainless steel/polyester blend staple fibres were used. The webs were produced at carding machine with the fibres. And then the webs were folded and were bonded with needle punching machine. The needle punched nonwoven fabrics were produced with three different thickness at the producing line. Experimental studies were carried out at large scale machines not laboratory machines. The Electromagnetic shielding tests were carried out EMSE test device. The results were compared and commented. The webs were bonded with needle punched machines. Electromagnetic shielding effectiveness of the nonwoven fabrics were tested. A coaxial transmission line method specified in ASTM D4935-99 was utilized to test the nonwoven fabrics and the tests carried out in the frequency range from 9 kHz to 3000 MHz.

Keywords: Electromagnetic shielding,nonwoven, stainless steel fibre

The Use of Monte Carlo Techniques to Study The Effect of Cotton Fiber Properties on Yarn Hairiness

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Abstract: The advent of high speed looms and knitting machines has elevated hairiness to be one of the important yarn quality parameters. The factors which affect yarn hairiness include raw materials and processing parameters. Apart form affecting the processing and quality of yarn, hairiness also affect the subsequent yarn processing and fabric quality. In this paper a study of the effects of cotton fiber properties on yarn hairiness has been undertaken. Studies of yarn quality parameters previously reported used classical and modern techniques. Classical methods give low prediction efficiency but provide a model which can easily explain the factors affecting yarn parameters. On the other hand the modern techniques give very high prediction efficiency but are unable to explain the effect of the factors on yarn quality parameters in a manner that is easy to understand. In this paper the relationship between fiber and yarn hairiness was undertaken using statistical modeling and Monte Carlo simulation. The statistical technique will be used to design cotton fiber –yarn hairiness model. A study of the effect of fiber properties which include fiber length and trash parameters, will be implemented using sensitivity analysis.

Keywords: Cotton, fiber, hairiness, yarn, Monte Carlo techniques

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A Study of Reactive Dyeing and Enzymatic Treatment on Some Properties of Cotton Knitted Fabric

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Abstract : This paper studied the relationship and effect of reactive dyeing and enzymatic treatment, using cellulase as the enzyme, on some properties of cotton knitted fabrics. Two types of cotton knitted fabrics, single jersey and interlock, were used. These fabrics were treated with reactive dyeing (two reactive dyes of different chemical structures were used) and cellulase treatment. However, the sequence of applying the reactive dyeing and cellulase treatment was varied so as to find out the effect of application on the properties of the fabrics. After applying the dyeing and enzymatic processes, the strength loss, air permeability and dyeability, were evaluated. Experimental results revealed that the cellulase treatment has a more significant effect in the interlock knitted fabric than the single jersey knitted fabric. However, it was interested that the results of the evaluated properties were altered depending on the sequence of applying the reactive dyeing and cellulase treatment. The results were recorded and discussed thoroughly.

Keywords: Reactive dyeing, Enzymatic treatment, Cotton knitted fabric, Strength

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Alternative Wet Pretreatments for Ramie Fabric and Their Evaluation

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Abstract: In this work, an attempt was made to substitute the conventional pretreatments of ramie with newer methods. Enzymatic scouring with pectinase and xylanase was carried out at fixed units/ml, for removal of specific impurities from the substrate. This was done with a view to have a treatment which is eco-friendly as well as less energy consuming. Also bleaching with potassium permanganate was done as against the usual high temperature hydrogen peroxide bleach. The evaluation of the processes by methylene blue exhaustion, residual lignin content and whiteness test gave satisfactory results. The scanning electron micrographs of selected samples further support the results.

Keywords: Enzyme, Pectinase, Ramie, Xylanase

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SECTION II

Antibacterial Activity by *Kaempferia Parviflora* Micoroencapsulation from and Applications for Textile Industry

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Abstract: This research was investigated in the efficiency of anti-bacteria by using Kaempferia Parviflora. The results found that Kaempferia Parviflora can be anti-bacteria in Staphylococus aureus type. The mean of Clear Zone Inhibition was 0.41 centimeter. The Process of Microencapsul produce was also studied, the result of which showed the size 10 – 150 µm.

Keyword: Kaempferia Parviflora, Antibacteria Activity, Microencapsul, Polylactic acid, Textile Technology

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SECTION II

Antimicrobial Activity of Chitosan and Tannic Acid on Cotton Fabrious Materials

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Abstract: Chitosan and tannic acid were applied in alone and in combination on cotton fibrous materials for the assessment of their antimicrobial activity. The antimicrobial activity of these antimicrobial agents was better in peroxide treated cotton fibrous materials than their untreated materials. Tannic acid showed higher antimicrobial activity than chitosan when applied alone. The application of chitosan and tannic acid combination on peroxide treated cotton materials provides the highest antimicrobial resistance.

Keywords: Antimicrobial, Chitosan, Cotton, tannic acid

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SECTION II

Application of Aromatherapy on Cotton Fabric by Microcapsules

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Abstract: This research were study microencapsulation method on cotton fabric, satisfaction of consumers towards five aromatherapy; lavender, rose, peppermint, jasmine, and eucalyptus and color fastness to washing according to AATCC 135-2006. The results found that the process of microencapsul was approximated with cool method and rose aromatherapy which showed the smallness size in average 2.4 µm. Finally, the result of the satisfaction found that lavender aromatherapy was 26.7% and the colorfastness to washing in lavender microcapsule was the highest level.

Keyword: Aromatherpy, Bedsheet, Microcapsul, Rose, Lavender, Peppermint

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Application of Nano Technology in Textile Finishing

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Abstract: Nano technology is the science of manipulating individual atoms and molecules for the development of practical application. The Properties of a material changes drastically at the nano scale due to high surface area to volume ratio and influence of quantum mechanics. A great potential has been demonstrated by textile finishing due to the advent of nano technology. Surface properties of a fabric can be manipulated and enhanced, by implementing appropriate surface finishing, coating, and/ or altering techniques, using nano technology in many ways. Finishing of the textile fabric using nano technology can be done, using nano materials in conventional finishing bath and in-situ synthesis of nano material on textile that can form nano structure on the surface. Various new techniques for application of nano material on textile i.e. Sol-Gel coating, Layer by layer deposition and plasma polymerisation can develop a multi functional fabric with relatively high durability, less energy consumption and low chemical usage as compared to conventional methods of application. Nano silver as an efficient leaching agent along with nano titanium dioxide has been stabilized on the surface of the fabric by using a cross linker to provide anti microbial effect to the textile fabric. An Eco-friendly approach for in-situ synthesis of silver nano particle using natural material like eucalyptus leaves has the potential of replacing the other costly chemical synthesis methods for applications of nano material. A fabric can be made a self cleaning using semiconductor nano titanium dioxide and this application has great chances of commercialization for being labor- saving and diverse substrate application. Both antimicrobial and self cleaning effect can be imparted using the combination of nano silver and nano titanium dioxide. Along with that wrinkle resistance can be imparted, using a cross linking agent with above two mentioned material. A Biomimatic super hydrophobic fabric using silica nanoparticles and perfluoro-octylated quaternary ammonium silane coupling agent (PFSC) showed

high hydrophobicity and oleophobicity. A novel durable flame-retardant cotton fabric using sodium hypophosphite, nano TiO2 and maleic acid was developed. The UV-Blocking property of a fabric can be enhanced using semiconductors like Zinc oxide and titanium dioxide to minimize the effect of natural weathering on the textiles used in agriculture and horticulture and to reduce the person UV exposure protecting the skin from damage. Improvement in warmth property of cotton using nano wool fibres indicates that nano wool fibres can be used as a functional finishing agent. Above mentioned important properties imparted by nano materials showed that applications of nano technology are increasing, reason being the increased consumer demands for multifunctional fabric. However few things such as higher cost and release of nano particles that may pose health risk should be taken into consideration.

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SECTION II

Application of Neural Networks for Colour Recipe Prediction of Reactive Dyes

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Abstract: Conventional theory for colour matching is Kubelka-Munk, but it fails in some situations. New intelligent procedures such as neural networks could learn the behavior of a complex system and produce accurate prediction. This paper investigates the ability of MLP (multiple-layer perception) neural network for colour matching of cotton fabric. Three reactive dyes, namely Levafix Red CA, Levafix Yellow CA and Levafix Blue CA, were used for experiments. The dyed samples were scanned and some features were extracted. Different neural networks were trained and tested. The results were encouraging. Colorants and their concentration were predicted with a mean square error (MSE) less than 10^{-3}.

Keywords: Colour recipe, Neural network, Reactive dyes, MSE.

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Application of Plasma in Difference Branches of Industries

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Abstract: Plasmas underlie numerous important technological applications and devices as well as our understanding of much of the universe around us. Plasma processing technologies are of vital importance to several of the largest manufacturing industries in the world. Foremost among these industries is the electronics industry, in which plasma-based processes are indispensable for the manufacture of very large-scale integrated microelectronic circuits. Plasma processing of materials is also a critical technology in, for example, the aerospace, automotive, steel, biomedical, and toxic waste management industries. Most recently, plasma processing technology has been utilized increasingly in the emerging technologies of diamond film and superconducting film growth. The dominant role of plasma-treated surfaces in key industrial sectors, such as microelectronics, is well known, and plasmas, certainly experimentally and, in places, industrially, are being used to modify a huge range of material surfaces, including plastics, polymers and resins, paper and board, metals, ceramics and in organics, and biomaterials. The objective of this work is to give a comprehensive description and review of the science and technology related to plasmas, with particular emphasis on their potential use in the textile industry.

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Application of the Synthesized Arylazopyrazolopyrimidine Dyes in Printing Polyester and Polyamide Fabrics

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Abstract: New series of arylazopyrazolopyrimidine dyes having bright colours were prepared. These dyes were identified and characterized for their: melting point, IR spectra, ^{1}H NMR spectra, Mass spectra and their antibacterial properties. The use of these new dyes for printing of PE-A, PE-B and polyamide fabrics by the transfer as well as the screen printing techniques was thoroughly investigated. The colour strength, the effect of dye particle size, antibacterial properties as well as the dye fastness properties was also investigated.

Keywords: polyester, printing, colour strength, particle size

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Development of Essential Oil/Dye Extraction Condensed By Refrigeration System for Using in Textile Industry

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Abstract: At the present, most dye used in textile industry is increasingly extracted from eco-friendly and biodegradable herbs. The purpose of this study was to develop the essential oil/ dye extractor using refrigeration method. Based on the high yield and good quality of oil/ dye were required, the extractions were performed at different temperature of 15, 20, and 25°C from three different types of herbs, lime peel, kaffir lime leaves, and lemongrass leaves. The extraction process was done by passing these ground herbs through the extractor 1-ton vapor pressing type with R-22 evaporator in a copper pipe, controlling the temperature at 15-25°C. To increase the essential oil/ dye quantity, the machine was further developed particularly at the water-heating system by means of the digital temperature controller. This developed controller was better than the conventional type, by adding a liquid thermostat for a 25-liter boiler using a 3000-watt electric heater. The most quantity of the essential oil/ dye could be obtained after heating to 100°C using water at temperature of 15 °C. More essential oil together with yellowish color was obtained from herb lime peel (8.98 ml) and the less were from the other two types of kaffir lime leaves and lemongrass leaves (8.25 ml and 8 ml). When optimizing the procedure, this invented extractor could produce more oil from the herbs kaffir lime leaves and lemongrass, with 52.5% and 20.7% respectively. The efficiency of the evaporator was 1.27 kWh, whereas the averaged energy consumption rate was 1.12 kWh. From the overall results above, this new extractor based on refrigeration system could be certainly applied to extract most biodegradable materials in textile industry.

Keywords: extractor, refrigerator, extraction, distillation

Development of Polyester-Wool Fabrics Dye Ability Using Plasma Sputtering

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Abstract: In this paper, the dye ability of worsted (polyester-wool) fabrics after plasma sputtering treatment was investigated. The samples were sputtered by copper particles. The natural dye (madder and weld), metal complex and disperse dyes were used for dyeing at the boil point. The Scanning Electron Microscope (SEM) was used for morphological study. Results were monitored by using, reflectance spectrophotometer analyses and the EDX was used for elemental analysis. The results show that, the dye ability of fabrics after plasma sputtering is improved and this effect is more pronounced for natural dyes.

Keywords: polyester-wool, dyeing, natural dyeing, plasma, plasma sputtering.

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SECTION II

Dyeing of Enzymatic Treated Hemp Fibre by Microwave Method

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Abstract: Microwave method is quite new method for textile wet processes and it has some advantages such as low energy requirement and fast process duration. Treatment of cellulose fibres before dyeing process effects the colour values of the natural fibres. In this study, hemp fibres were treated with pectinase enzyme in different concentrations (1%, 2%). Conventional and microwave methods were used for the enzymatic treatment of hemp fibres. After enzymatic treatment, hemp fibres were dyed by using conventional and microwave methods. Colour values of the dyed hemp fibres were investigated.

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Dyeing of Polyester by Using Microwave Method in Glycerine Media

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Abstract: High temperature dyeing is used for dyeing of 100% polyester materials. Carrier method is used for polyester/wool blends. Generally dispers dyestuffs are used for polyester dyeing. These dyestuffs do not dissolute in water and they are applied to the polyester material as dispersion by the help of a dispergator.
In this study, glycerine-water/dyestuff blend were prepared by using microwave method. Then this blend was applied to 100% polyester fabric by using microwave method. Colour values of the dyed polyester fabric were investigated.

SECTION II

Effect of Alkali Treatment & Dyeing on Fibrillation Properties of Lyocell Fiber

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Abstract: Lyocell is a new generic name given to a cellulosic fiber which is produced under an environmentally friendly process by dissolving cellulose in the tertiary amine oxide *N*-methylmorpholine-*N*-oxide (NMMO). Lyocell fiber shows some key advantageous characteristics over other cellulosic fibers; for instance, a high dry and wet tenacity and high wet modulus. However, the fiber also shows an extensive tendency to fibrillate in the wet state, which causes the formation of longer and more oriented crystalline regions and smaller but more oriented amorphous regions in the fiber structure. This fibrillar structure is responsible for the high fiber tenacity but low lateral cohesion, especially when subjected to mechanical stress in the swelled state. These have been proven to be problems in launderability of the product and difficulty to control the uniformity of color uptake during dyeing, Pills formation and streak marks in dyeing. In the present study, report on a fibrillation tendency of lyocell, in different types of alkali-treating, and dyeing of poly functional reactive dyes. The effect of alkali concentration, poly functional reactive dyes on fibrillation tendency can be absorbed by SEM Analysis also various physical and chemical properties can be evaluated for treated fabrics.

Keywords: Alkali treatment, Fibrillation, Pilling, Polyfunctional reactive Dyes, SEM.

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Effect of Calcium Chloride on Electrospinning of Silk Fibroin Nanofibers

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Abstract: Silk fibroin is one of candidate materials for biomedical application, because it has good biocompatibility and minimal inflammatory reaction. Electrospinning is a simple method capable of producing nanofibers for biomedical applications. In this study was interested to produce nonwoven sheet from silk fibroin with needleless electrospinning method andconcentrated on the alternative way of spinning solution preparation by using a mixture of formic acid and calcium chloride as solvent. The effects of salt concentration in formic acid and voltage of electric field on fibers morphology were studied. It was observed that nanofiber has good uniform fiber distribution on nonwoven sheet with increasing the applied voltage. Calcium chloride is able to increase solubility of silk fiber in formic acid with the 2 wt% calcium chloride being preferred. Silk nanofibers with diameters ranged from 200 to 2300 nm.

Keywords: silk fibroin, needleless electrospinning, calcium chloride

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Effect of Dispersing Agents on Synthesis and Application of Nano Titanium Oxide for Antimicrobial Property

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Abstract: With the growing demand for comfortable, clean and hygienic textile goods, an urgent need for production of antimicrobial textiles has arisen. In this work, synthesis of nano titanium oxide has been done by sol gel method and the effect of dispersing agents with varying ionic character on the particle size of the synthesised nano particles in terms of crystallinity and particle size was studied. Also, they were applied on cotton substrate and tested for their antimicrobial activity. The effect of the application of nano titanium oxide on the physical properties of the substrate, such as tensile strength, bending length, crease recovery angle has been analysed.

Keywords: Antimicrobial, Nanotechnology, Nano titanium oxide, dispersing agents

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Effect of Plasma Treatment on Denim Fabric

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Abstract: The plasma technology is considered to be very interesting future oriented process owing to its environmental acceptability and wide range of applications. Since recently, however, the plasma Technology is being introduced in textile industry as well. Fields of application are desizing, functionalizing, and design of surface properties of textile fibers. Plasma technology is suitable to modify the chemical structure as well as the topography of the surface of the material. This study was aimed to investigate the influence of atmospheric-pressure plasma (exposure time and electrode spacing) parameters on various properties of indigo dyed denim fabrics. FAST system was used to examine various properties of untreated and differently plasma treated denim fabrics. The morphology of plasma treated fabric was assessed by SEM analysis. The results showed that fabric properties were highly affected by plasma parameters. The results also showed a considerable increase in surface friction coefficient although. The SEM images clearly showed that the atmospheric plasma modified the fibre surface outwardly.

Key words: Denim, Plasma technology, FAST system

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Effect of Reactive Dyeing and Cellulase Treatment on the Pilling Properties of Cotton Knitted Fabric

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Abstract: With the increasing popularity of cotton knitted fabric, greater demands for quality have been required as end-users have become more aware of its negative properties. Pilling has become a much more serious problem for the knitted apparel. Although cellulase treatment has been well known as a suitable method for overcoming the pilling problem so as to gain more desirable quality and appearance of dyed goods, it is important to understand how the dye affects the performance of the cellulase treatment. Therefore, this paper is aimed to study the relationship of reactive dyes and cellulase treatment on the pilling properties of cotton knitted fabric. Two commercial reactive dyes with different chemical structures were used. The dyeing and cellulase application were conducted in different sequence which were aimed to study the effect of those processes on the pilling properties of cotton knitted fabric. Experimental results revealed that the pilling results were varied depending on the different stages of applying reactive dyeing and cellulase treatment. The results were recorded and would be discussed thoroughly.

Keywords: Reactive dyeing, Cellulase treatment, Cotton knitted fabric

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Elastic Electrospun Nanostructures Based on Polyurethane/MWNT

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Abstract: Electrospinning is a process by which nanofibers can be produced by an electrostatically driven jet of polymer solution. Polyurethane and Polyurethane/ Multiwalled carbon nanotubes (Pu/MWNT) nanocomposite nanofibers were prepared by Electrospining process. Possibility of fabrication of stretchable nanofiber mats was reported and electrical conductivity of the mats was measured at various strain levels. Viscosity of solutions increased with increasing MWNTs Content. Scanning Electron microscopy (SEM) results indicate that diameter of nanofibers is 83.3 nm up to 844.5 nm depending to MWNT content in the nanocomposite. Electrical conductivity of PU/MWNT nanofiber mats Increased with increasing MWNT%. It was shown that, the conductivity of the coated yarns has noticeable strain sensitivity.

Keywords: Strain sensor, Smart textile, Nanofiber, MWNT

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Electrical Conductivity and Chromic Behavior of Poly (3-methylthiophene) - Coated Polyester Fabrics

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Abstract: Electrically conductive substrates with chromic behavior are prepared using conductive polymer coating of the substrate. Poly (3-methylthiophene) (P3MT) - coated polyester fabric with specific electrical and chromic properties, for instance electrochromic and piezochromic behavior, was successfully obtained by chemical polymerization with the help of continuous and speed stirring technique. The effect of polymerization time, temperature and oxidant concentration on conductivity of the P3MT - coated fabric was studied. The presence of P3MT particles on the surface of the coated substrate was confirmed by scanning electron microscopy (SEM), fourier transform infrared (FTIR) and UV-Vis spectroscopy, electrical surface resistivity, pressure and applied voltage dependence visible reflectance spectrophotometer measurements, and X-ray diffraction (XRD) analysis. The blue shift of c95 nm in wavelength of maximum absorption observed in the reflectance spectra of coated polyester fabric. Under high pressure, the P3MT - coated polyester fabric demonstrated piezochromism. The coated substrate also showed electrochromic behavior under an electrical applied voltage of 12v.

Keywords: Poly (3-methylthiophene); Chemical polymerization; Chromic behavior; Piezochromism

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Investigation on Antibacterial Activity of Cotton Silver Coated Fabric After Dyeing

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Abstract: In this research work, the cotton fabrics were sputtered using DC magnetron sputtering system for different times of exposure by silver. Then the silver coated samples were dyed by different classes of synthetic and natural dyes. The dye ability of coated samples was compared with untreated cotton. The reflective spectrophotometer was used for this purpose. The morphology of the cotton fabrics before and after dyeing was observed using a scanning electron microscope (SEM). The antibacterial activity of samples before and after dyeing, were investigated and compared. For antibacterial investigation, the agar test (Halo method) is a well-established method to provide a semi-quantitative analysis. Also the antibacterial counting tests were used. Very good antibacterial activity was achieved and the details will be discussed in full paper.

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Investigation on The Effect of Titanium Dioxide Nano Particles on NIR Camouflage

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Abstract: Cotton fabrics were dyed with three commercial vat dyes in order to providing camouflage in NIR region and imitate reflectance profile of greenish leaves. For reducing contrasts between target and its surrounding in visible range, used vat dyes combined in appropriate proportion and two standard shades of the 1948 U.S army pattern, NATO and forest green, were received on cotton fabrics with color difference less than 2. Reflectance profiles of dyed cotton fabrics were measured and results showed that reflectance profile of dyed samples located between reflectance of greenish leaves. For investigation on the effect of nano particles on NIR camouflage, nano particles of TiO_2 were applied on dyed cotton fabrics using pad-dry-cure method. Reflectance of coated dyed samples was measured in various amount of nano TiO_2. Results showed that in both shades, nano TiO_2 increases the reflectance in NIR region and with increasing amount of nano TiO_2 the reflectance profile of samples nears to maximum amount of reflectance of greenish leaves. Because of the effect of white color of nano TiO_2 powder on the shade of dyed cotton and increasing color difference of coated dyed samples with standard shades, in visible range with increasing the amount of nano TiO_2, optimum amount of nano TiO_2 for NATO and forest green shade determined 0.75% and 0.5%, respectively.

Keywords: NIR camouflage; NATO green; Forest green; Nano TiO_2; Reflectance

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Ionic Crosslinking of Polyurethane Copolymers by the Grafted Pendant Groups

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Abstract: In this investigation, the PU grafted with a dimethylamino or a carboxyl pendant group were ionically crosslinked by neutralization to increase their molecular interaction and the impact on tensile strength and shape memory is examined. The maximum tensile stress was improved by controlling the ratio of A and C-type PU. Shape memory properties are high and reproducible, although grafted with the pendant groups.

Keywords: Polyurethane, Ionic crosslinking, Grafted pendant groups, Shape memory property

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SECTION II

Microwave Assists the Synthesis of Aryl Azopyridones Dyes and Studying Their Printing Properties

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Abstract: The Purpose of this research is to synthesize several new pyridine-containing an arylazo function using a microwave technique as the preand their applications in textile printing. The structure of prepared dyes were established and confirm for the reaction product on the basic of their element analysis and spectral data (MS, IR and ^{1}H-NMR). The suitability of the prepared dyestuffs for either heat transfer printing or traditional printing on polyester fabrics has been investigated. The prints obtained from dyes possess high color strength as well as god overall fastness properties.

Keyword: polyester, printing, colour strength, pyridpne

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Polypropylene Nanocomposite Fibres with Improved Dyeability and Thermal Stability

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Abstract: A series of polymer-clay nanocomposite materials were prepared consisting of Polypropylene (PP) matrix and dispersed inorganic clay modified with Steryl amine (SA), Cetyl pyridinium chloride (CPC), Benzyl dimethyl N-hexadecyl ammonium chloride (BDHAC) and hexadecyl trimethyl ammonium bromide (HTAB) by direct melt intercalation. The organoclay loading varied from 0.5 to 3 % (by wt.). Organoclays were characterized by X-Ray diffraction (XRD) and detailed analysis of mechanical, thermal and X-Ray diffraction (XRD) study of PP/Clay nanocomposites was carried out. With the increase of loading of clay the crystallinity of the composite fibre decreased resulting in the improvement in the dyeability with disperse dyes. The PP nanocomposites containing organically modified clay decreased the tensile strength properties, although such a decrease was confirmed to the acceptable limit.

Keyword: Fillers; organaclay; nanocomposite; polymer; matrix; polypropylene.

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Preparation of Flexible Fabric Based Electronic Circuit Using Inkjet Printing Co Eelectroless Plating Technique

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Abstract: A convenient method has been developed for applying patterned nickel tracks on polyester fabric for electronic applications. The process comprises inkjet printing of an aqueous palladium (II) solution on surface treated polyester fabric, followed by reduction to metallic palladium and electroless nickel plating. The nano-structure of the nickel pattern was investigated using scanning electron microscopy (SEM) and the size of the nanoparticles were in a rang of 20-100nm.In addition the electrical conductivity was evaluated using four probe technique and results showed reliable and stable conductivity about 2632S/m. Using a desktop inkjet printer,the procedure was successfully applied for manufacturing inter digitated conductive pattern as used for many applications such as antenna, electronic circuit, coil, ECG sensor, and capacitor .

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SECTION II

Some Studies on Temparary and Permanent Flame Retardants on 100% Cotton Fabric

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Abstract: To provide additional protection from fires and to increse escape time when fire occurs, methods to enhance the flame retardance of consumer goods have developed. Present work reports on process undertaken to prepare flame retardant cotton fabrics with well establised borex/boric acid mixture as temparary finished fabric and pyrovatex process for permanent finish in vary small laboratory scale. Fabric properties with permanent finishes and without permanent finishes were observed and compare. It was observed that 70/30 borex/boric acid combination is cheapar option for attaining flame retardancy but looses its handle, strength and feel. Pyrovatex results flame retardant fabric with almost no negative effect on fabric properties.

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Studies on Wicking Behavior of Polyester Fabric

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Abstract: Wicking plays a vital role in determining comfort and moisture transport behavior of active wear and sports wear. An analysis of vertical wicking of polyester woven fabric was done by using Lucas-Washburn [1] equation.

$$\frac{dh}{dt} = \frac{\left(\frac{R_{mi}}{\tau}\right)^2}{8\eta h}\left(\frac{2\gamma_L \cos\theta}{R_{mi}} - \rho g h\right)$$

For determining the theoretical wicking height by Lucas-Washburn equation, the macro capillary, micro capillary and tortuosity factor of plain weave was considered. Experimental results were compared with the theoretical results. For polyester the experimental wicking height was more than that of the theoretical wicking height. It was found that vertical wicking of fabric was significantly influenced by the tension applied, micro capillaries, macro capillaries and tortuosity. The warp way and weft way wicking behavior of the fabrics were different. The variation in weft yarn densities of polyester fabric also had a considerable effect on wicking.

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Synthesis and Characterization of Shape Memory Polyurethane Grafted with a pH Indicator

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Abstract: Shape memory polyurethane (SMPU) was grafted with a pH indicator (Thymol blue, Alizarin Yellow GG, Bromocresol purple and Bromocresol green) having OH functional group for coupling. The SMPU showed a quick response to pH change, did not lose the dye in aqueous solution, and could be reused for several times. The SMPU was characterized by UTM, IR, UV-Vis, DSC, NMR, and Viscometer, which showed that high tensile strength and shape recovery compared to linear SMPU, UV peak shift depending on the surrounding pH, and the increase of melting temperature with the increase of dye content. Therefore, a smart SMPU that can detect pH change could be successfully made.

Keywords : Shape memory polyurethane, pH indicator, Thymol blue, Alizarin Yellow GG

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Synthesis and Evaluation of A Novel Insect-Repellent MCT Reactive Dye on Nylon 6

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Abstract: Insect-repellency of fibre is a property which makes the fibre to be of interest in the field of military and health. The insect-repellent substrate could be prepared using either functional finishing or applying an insect-repellent dye. In this paper, Insect-repellent nylon 6 is obtained using a novel insect-repellent reactive dye containing N, N-diethyl-m-toluamide. To do this, N, N-diethyl-m-toluamide (DEET) was first nitrated at the para–position relative to amide functionality. The nitrated product was reduced in the presence of C_2H_5OH, $SnCl_2$ and HCl. The produced amine was then condensed with 2, 4, 6-trichloro-1, 3, 5-triazine (cyanuric chloride) as a reactive group in below 5 °C. The resultant adduct was finally reacted with an amino group present in 6-amino-1-hydroxy naphthalene-3-sulfonic acid (J-acid) to produce 7-(4-chloro-6-(4-(diethylcarbamoyl)-2-methylphenylamino)-1,3, 5-triazin-2-ylamino)-4-hydroxynaphthalene-2-sulfonic acid. In order to synthesis azo dye, sulfanilic acid was diazotized using HCl and $NaNO_2$ and then coupled to the above prepared component to produce insect-repellent reactive dye. An analogue dye was prepared via the same route without insect-repellent group making stage. The chemical structures of the novel dyes were characterized using FT-IR and ^{1}H NMR spectroscopy. The spectroscopic properties of the dyes were determined in terms of λ_{max} and ε_{max} in aqueous solution. The novel dyes were then reacted with nylon 6 and bonded to it covalently to provide permanent insect-repellent substrate. The insect-repellent efficacy of the reacted nylon 6 was studied using standard methods for Anophle mosquito repellent. The insect-repellent dye reacted nylon 6 showed insect-repellent activity.

Keywords: Reactive dye; Insect-repellent; Nylon 6; DEET; ^{1}H NMR

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Surface Modification of Cotton and Polyester Fabrics Using Alginate and Copper (II) Sulphate Interactions: Characterisation of Thermal Comfort Properties

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Abstract: Fulfilling physical and thermal comfort and functionality in hospital beddings, curtains and apparel are critical for healthcare workers and patients. The maintenance of thermal comfort and necessary protective performance of medical apparel are important due to hard and diverse physical activities in hospital environment. A common threat with antibiotic resistant bacteria is that they are spread very easily through patient-staff and patient-patient contact. These prevalent bacteria are often found on general surfaces such as the floor, radiators, and beds and are also on fabrics such as hospital gowns, gloves, bed linen and curtains. Copper has been identified as being effective against a broad spectrum of microorganisms such as Clostridium difficile, Escherichia coli O157:H7, Influenza A (H1N1), Listeria monocytogenes, and methicillin-resistant Staphylococcus aureus. In this experimental study, 100% cotton and 100% polyester woven fabrics which are commonly used in hospital environment were treated with sodium alginate and copper sulphate by using ultrasonic energy. The fabrics were immersed in sodium alginate solution (2.5% w/v) for 24 hours and rinsed with distilled water. The rinsed fabrics were submerged in 1%, 3%, 5%, 10% and 15% w/v copper solution and subsequently the fabric specimens were subjected to 10 minutes of ultrasonic energy treatment. The untreated and the treated fabrics' thermo physiological properties including; thermal conductivity, thermal resistance, thermal absorbtivity, water vapour permeability, and heat loss were tested

and analysed by using Alambeta and Permetest instruments. Analysis of variance (ANOVA) was employed to determine the significance of the tested properties for assessing the statistical significance of the differences between i) the untreated and the treated fabrics; and ii) dry and wet states of the comfort test results.The results clearly demonstrated that the cotton and polyester fabrics were successfully treated with the copper sulphate solutions and the coated fabrics showed considerable changes compared to their untreated forms. The fabric's thermal conductivities and thermal resistances were increased significantly after the treatment. It was also observed that the conductivity of the fabrics increased gradually. Furthermore, the treated fabrics had lower thermal absorptivity values. The treated fabrics showed considerably lower water vapour permeability compared to the untreated fabrics.

Keywords: alginate, copper treatment, thermo physical properties, ultrasonic energy

SECTION II

Thickening Agent Based on Tamarind Seed Gum for Disperse Printing of Polyester

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Abstract: The technical feasibility of using tamarind kernel powder from different areas in Thailand as a thickener for printing polyester with disperse dye in comparison with the tamarind kernel from India which used in textile printing factory was examined. The result indicate that the properties of printed samples (colour values, colour strength (K/S), overall fastness properties, handling and sharpness) were good to very good level. Only slight differences were observed between two sources of tamarind kernel (Thailand and India) utilized for thickener.

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The Atractylodes Lances Extract for Microbial Resistant in Textiles

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Abstract: Different solvents of varying polarity were examined and compared their capabilities to extract essential active agents from dried Atractylodes lancea. Aqueous was found to be the best among interested solvents for extraction which yields 30.63% of dried herb. Methanol yields 21.3% whereas acetone and hexane can extract only 6.72 % and 4.17% of dried herb, respectively. Compared to all other extracts, the acetone extract was found to exhibit the most significant antibacterial activity against all types of bacteria while the aqueous extract showed no inhibition**.** Cotton fabrics were treated with the acetone extracts and evaluated for their antibacterial activities. The treated fabrics showed stronger activity against Gram-negative than Gram-positive.

Keyword: Atracylodes lancea, antibacterial activity, cotton fabric, textile

The Tabacco Leaf Extract and Antibacterial Activity in Textile

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Abstract: Effect of the use of water and organic solvents such as acetone, N,N-dimethylformamide (DMF) and ethanol at various concentrations on the total polyphenol content and antioxidant activity was studied for the tobacco leaf. The fifty percent DMF extract showed the highest polyphenol content of 167.4 mg GAE/g and provided the greatest antioxidant activity. The results showed that solvent with different polarity had significant effect on polyphenol content and antioxidant activity. The inhibition activities on *Escherichia coli* and *Staphylococcus aureus* were also measured for evaluating the antimicrobial activity of cotton fabric treated with the tobacco leaf extract. The diameters of inhibition zones were 21.33 ± 0.86 and 18.50 ± 0.77 mm, respectively. The results showed that the polyphenol extracted from tobacco leaf had great potential as antioxidant and antimicrobial agent for textile application.

Keywords: Tobacco leaf, polyphenol, antioxidant, antibacterial activity

Technical Textile

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Abstract: Although 'technical' textiles have attracted considerable attention, the use of fibres, yarns and fabrics for applications other than clothing and furnishing is not a new phenomenon. Nor is it exclusively linked to the emergence of modern artificial fibres and textiles. Natural fibres such as cotton, flax, jute and sisal have been used for centuries (and still are used) in applications ranging from tents and tarpaulins to ropes, sailcloth and sacking. There is evidence of woven fabrics and meshes being used in Roman times and before to stabilise marshy ground for road building – early examples of what would now be termed geotextiles and geogrids. What is relatively new is a growing recognition of the economic and strategic potential of such textiles to the fibre and fabric manufacturing and processing industries of industrial and industrialising countries alike. In some of the most developed markets, technical products (broadly defined) already account for as much as 50% of all textile manufacturing activity and output. The technical textiles supply chain is a long and complex one, stretching from the manufacturers of polymers for technical fibres, coating and speciality membranes through to the converters and fabricators who incorporate technical textiles into finished products or use them as an essential part of their industrial operations. The economic scope and importance of technical textiles extends far beyond the textile industry itself and has an impact upon just about every sphere of human economic and social activity. And yet this dynamic sector of the textile industry has not proved entirely immune to the effects of economic recession, of product and market maturity, and of growing global competition which are all too well known in the more traditional sectors of clothing and furnishings. There are no easy paths to success and manufacturers and converters still face the challenge of making economic returns commensurate with the risks involved in operating in new and complex markets. If anything, the constant need to develop fresh products and applications, invest in new

processes and equipment, and market to an increasingly diverse range of customers, is more demanding and costly than ever.
A technical textile has never been a single coherent industry sector and market segment. It is developing in many different directions with varying speeds and levels of success. There is continual erosion of the barriers between traditional definitions of textiles and other 'flexible engineering' materials such as paper and plastics, films and membranes, metals, glass and ceramics.

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SECTION II

Trends in the Bio-Fibers Application

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Abstract: Bio-fibers represent an emerging and innovative component of the textile value chain. The strong expansion of the bio-fiber applications is expected to take place in the next few years. The article will review major issues related to bio-fibers application and the technological substitution of old fiber production technology by the new technology. The Fisher-Pry description and its variants have been widely used in the study of technology substitution. Although the model was introduced using empirical arguments, it is now a well-known fact that the model considers a special ease of logistic growth and can be obtained from the Lotka-Volterra competition equations. The MATLAB program for utilization of Fisher Pry and generalized model will be described. Estimates of the innovation diffusion process will be examined for the case of replacement of polyester fibers by PLA fibers.

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The Antimicrobial Effect of Silver Nanoparcial Detergents on Human Flora Through Fabric Usages

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Abstract: Silver nanoparticles (nano-Ag) used in numerous commercial products, including textiles have been proved to be most effectively potent antimicrobial efficacy against bacteria, viruses and eukaryotic micro-organisms. In the mean time, there is increasing concern of exposure to these nanoparticles that may cause potential adverse effects on humans as well as the environment. This study determined the effect of nano-Ag solution released from commercial detergents on the common microorganisms or normal flora habituated on human skin. By washing the fabrics, the nano-Ag were released to the environments as well as to the fabrics. For two types of fabric samples, cotton T-shirt and pants, the released nano-Ag from the detergents was investigated for the antibacterial properties of against the model Gram-positive (Staphylococcus aureus) and Gram-negative (Eschericia coli) bacteria, chosen to be the preliminary microorganisms of normal flora on each fabric. The precisely controlled temperature, pH, concentration of detergents, and mechanical stress, to simulate conditions during household washing had been carried out by washing twice in pure water as well as tap water. The results showed that less than 15% of silver released from commercial detergents could possibly be attached to the fabrics and thus released into the environments by washing. However, after incubation of these washed fabrics on the human skin at least 6 hours, nano-Ag released from these two different fabrics indicated as the antibacterial activity of the fabrics against the bacteria varied, ranging from 0% to greater than 50% after rewashing the cloths with this detergent until 10 times. The quantity of silver released from the different fabrics was likely to be dependent on whether the large amount of sweat on the skin produced as well as the fabric types, including its pH. The zones of inhibition were larger for the commercial cotton

fabric type shirt, as shown a minimum of 24 mm and a maximum of 29.5 mm for Gram-positive bacteria and a minimum 14 mm and a maximum of 18.6 mm for Gram-negative bacteria in the pants. From overall, this information might be useful to evaluate the potential human risk associated with the use of products containing silver nanoparticles.

Keywords: nano silver, antimicrobial property, fabric, zone of inhibition

SECTION II

An Analysis of Factors Affecting the Knitwear Ironing: A Case Study of Hi-Progress Knitting Co., Ltd

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Abstract: This paper presents an experimental research into the dimensional change of knitwear bysteam ironing at 120 degree Celsius. The aim was to explore the dimensional change of knitwear of 3 kinds of yarns which were made from 100% cotton, 60% cotton and 40% acrylic and 100% acrylic. The analysis method was in according to Hi-Progress Knitting standard by using steam ironing. The result of the dimensional change of each specimen was measured after ironing in wale and course direction. The results showed that knitwear made from 100% cotton was growth the most: 4.00% in wale and 3.4% in course while knitwear made from blend yarn 60% cotton and 40% acrylic was growth 2.4% in wale and 2.9% incourse, and knitwear made from 100% acrylic was growth 2.0% in wale and 3.9% in course. The result of color change after steam ironing showed in very good level.

Keywords: Knitwear, Knitwear Ironing, Garment Industry, Ready-to-wear, Steam Iron

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Apparel Product Evaluation and Quality Perception of Turkish Consumers

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Abstract: The purpose of this paper is to discover the product evaluation and quality perception of Turkish consumers by focusing on the product attributes and their relations with the social and demographic factors. A survey composed of six basic groups of questions was prepared. Five groups of questions belong to the product attributes that are determined based on the literature as 'Fashion or trendiness', 'Brand name or image', 'Style and fit', 'Durability and performance' and 'Price' were prepared. The questionnaire is sent to 1000 people and the respond rate is 63.2%. The data is analyzed using non parametric variance analysis and t-tests. The findings are compared with the results obtained in the previously established studies both in Turkey and the other countries

Banana Fiber Ribbon with Flowers

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Abstract: This research aims to study the development and application of banana fiber ribbons, ribbons, flowers, banana fiber used in the choice of banana fiber ribbon of the floral arrangements. The data collected by questionnaire from a sample of 110 flowers were analyzed with computer software. The results show that the majority of female flowers. Aged between 31-40 years of undergraduate study. The experience of working with flowers less than 5 years with a monthly income of less than 10,000 baht and the location of a flower shop near the private satisfaction of the flower on the ribbon, banana fiber. The surface of the ribbon fiber banana is mostly satisfied with the durability of the subject. The flexibility of the ribbon, banana fiber and beauty. Most of them have the satisfaction of the shiny side of the ribbon to use. Most were satisfied with the subject. Appropriate in a bind, and the price. Most of our products at the price of banana fiber ribbons are suitable when compared to other natural fiber ribbon.

Keywords: banana fiber ribbons and artificial flowers business satisfaction

Body and Handle Pattern Age 3-6 Children's Bacis Drawing in the New an Essay Topics

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Abstract: Children's clothing, to protect the child against the effects of nature, according to the body shape that can receive, different and provide an aesthetic appearance, development and growth have beneficial effects on all of the clothing is. At the beginning of the issues frequently encountered in children's clothing clothing not suited to the body as a full income. This issue was prepared in accordance with the Turkish children a basic body and arm of the development pattern will be solved. Also is the foundation of the basic body pattern clothes. Ergonomic and applied properly model applications on the basic body pattern of results obtained in clothing appropriate to the child's body will be. Therefore, the body characteristics of Turkish children and body types in accordance with the basic body and arm be recognized pattern should be prepared.In this study created a new experiment with the basic body and arm patterns 3-4-5-6 age children on children 3-6 years of data obtained in parallel to test whether the child has been considered the development of the basic body and arm patterns. Research and random screening method with the model selected, including 100 children at any age group constitutes the total sample 400kişi research. Sample data received over the computer environment can be transferred to the statistical studies on them have been made necessary, the results obtained was made into tables and graphs. According to survey results, the data obtained in the experiment with a new basic body and arm molds created years 3-4-5-6, 3-4-5-6 in Turkish children between the ages of adaptation does not fully. This is because of Turkish children may have different

anatomical structures. On the anatomical structure, nutrition, heredity and environment are thought to be affected.

Keywords: Children's clothing, pattern system, ergonomics.

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SECTION III

Colour Gamut of *Holarrhena Antidysentrica* Linn Dyed Silk

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Abstract: Holarrhena antidysentica Linn is a member of apocynaceae, small to medium size deciduous tree, attaining height of forty feet. Tall shrub bearing fairly large, opposite short petioled membranous ovate oblong, prominently veined leaves. Present work deals with dyeing of silk with Holarrhena antidysentrica leaf extract as a source of natural dye. The study was aimed to evaluate the colour values of dyed silk in terms of L*a*b*c*h* values which fall within the yellow red region. Alum as a sole mordant and alum in binary combination with metal and natural mordants significantly altered the colour shades to expand the palette. If results in good to excellent fastness against washing, perspiration, rubbing and sunlight fastness.

Keyword: Holarrhena antidysentrica Linn Silk

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SECTION III

Commercial Viability for Colouration of Nylon Substrate with Natural Vegetable Dyes

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Abstract: Natural colourants are unsophisticated and harmonised with a possibility of very little chemical reaction and consequently little health hazards. Due to the growing trend all over the world for natural colourants and in the present context of eco-preservation, these colourants are likely to develop a tremendous commercial potential. There is also a growing awareness of their non-hazardous nature which has led people all over the world to accept the fact that natural dyes are still much more traditional and hygienic. In the present work, a commercial approach has been undertaken to produce a variety of shades with different tones and hues on nylon substrate with natural vegetable dyes. The vegetable dyes selected for the work have been derived from Indigofera tinctoria, Mallotus phillipinesis, Curcuma tinctoria and Lawsonia inermis. These dyes are widely used in India for household purposes and other varied applications. These dyes are applied on nylon substrate by various dyeing methods, viz. exhaust, pad-dry-steam and pad-dry-cure dyeing methods. The dyeing results for substrates dyed with natural dyes have been analytically assessed by measuring the colour strength (K/S) values of dyed samples using UV spectrophotometer. From these values, the shade cards have been prepared for different percentages of shades. Various fastness properties (wash, light and rub) of the dyed samples have also been evaluated.

Keyword: Nylon, Indigofera tinctoria, Mallotus phillipinesis, Curcuma tinctoria, Lawsonia inermis

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Comparison of True Color and E-color on Indigeneous Textile

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Abstract: Although the Internet is an important tool for business nowadays, most of the Internet shoppers do not trust the e-colors or the colors they see on their computer screens.Consequently, those Internet shoppers may not decide to purchase products because the true colors of the products are in doubt. In particular, to display textile products on web sites, their authentic characteristics depend on color accurate web display. Therefore, accurate color information is an important part of the communication message embodied in textile products displayed on web sites. In this paper, we aim at investigating variations of color display on computer screens or websites compared with color of the real products. We focus on displaying indigeneous textile which is one of the unique regional cultural fabric products of Thailand that has high value. Eighty-five college students consisting of fifty female and thirty-five male were participated in our experiments to test the similarity of color of indigeneous fabric images displayed on computer screens compared with the real fabrics. Totally 138 images of indigeneous fabrics with variation in textures were collected and used in our experiments. The colors of the indigeneous fabrics were in blue tone but had different shades. Each participant had to evaluate similarity of color of all 138 fabric images against the real fabrics. Each image was evaluated three times per one participant on separate days. According to statistical analysis, we found that the colors of indigeneous fabric images displayed on computer screens were significantly different from the true colors of the real indigeneous fabrics. The colors of all test images on the computer screens were lighter than the true colors. In particular, the colors of plain indigeneous fabric images had more deviation than the colors of textural indegeneous fabric images. The preliminary image enhancement results showed that a power-law transformation can alleviate this color deviation

problem. It has high potential to be used as an image processing technique for eliminating e-color deviation problem automatically in order to increase color accuracy viewed on the computer screen, and ultimately increase customer satisfaction and reliability on e-business related to textile products on the Internet.

Keywords: indigeneous fabric, e-color, true color, e-business, Internet, image processing

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SECTION III

Determining Performance Attributes Using SCOR Model to Compare Apparel Retailers

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Abstract: The apparel industry is characterized by intense competition and short product life cycles. Retailers are beginning to assume a central role in the configuration of supplier networks, being operators who act globally either in terms of market seeking or resource seeking. Today, many researchers have been focused on the increasing importance of retailing. The retail distribution channel structure of the apparel industry is a very important and also strategic decision. Many global brands are relocating their production and sourcing from different suppliers. This paper firstly analyse three important global brands, Zara, H&M and Marks&Spencer in order to define important performance attributes and then specify performance attributes and their relation to selected marketing mix elements using SCOR model. This study aimed to provide textile scientists and academicians to create a comprehensive and valuable database for comparing some successful retailers according to the performance attributes.

Key Words: Apparel industry, retailers, distribution channel design, Supply Chain Operation Referance (SCOR), Performance Attribute, ZARA, Hennes & Maurıtz (H&M), Marks&Spencer (M&S)

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Development of an Optimized Sizing System for Chinese Dress-form

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Abstract: The sizing system used for ready-to-wear in China has been established based on girth measurements and height of body. However, woman's body has a very different characteristic with different ages, the existing sizing system may be inappropriate in the categorization of body sizes for ready-to-wear clothing. The dress-form is essential tool for effective clothing design and production. In order to provide a more detailed and accurate numerical basis for ready-to-wear clothing, an optimized dress-form sizing system was developed. 42 measurements of 644 subjects aged between 18 and 56 were obtained from 3D body scanning. Except bust girth and height, the difference between bust thickness and waist thickness was identified through principal component factor analysis and K-means cluster analysis as the critical parameter to classify the body feature. An index of aggregate loss of fit was used to validate the size charts, and the results showed that the developed sizing system had a good fit.

Keywords: 3D anthropometric measurements; dress-form sizing system; principle component factor analysis; K-means cluster analysis

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SECTION III

Development of Transformation Textile Product from Mulberry Fiber

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Abstract: The objectives of this research were to study: the appropriate methods of mulberry technical textile processes, mulberry technical textile transformed into lamp products, and study the customers' preference on lamp products. This study was carried out by using a randomized completed block design: RCBD for the experiment. After that, the properties of the technical textile were tested by the standard methods according to American Society for Testing and Materials (ASTM). And then, 12 specialists were used to evaluate the characteristics that require of technical textile. Then the customers' preference for the lamp products were studied, questionnaires was used to collect data from the sample group of 400 persons, which were drawn from the population by using random sampling technique. Data were analyzed by using frequency, percentage, standard deviation and One-Way ANOVA. The results were found that; the appropriate methods of mulberry technical textile processes was to used 5 grams of PVA powder and 20 minutes for to beat the mulberry fiber by machine. The characteristics that require of technical textile were good level to follow the community products standard. The customers' basic data were most female, had 26-30 years old, had a bachelor degree, more than half been company officer, and had 10,001-15,000 baht of income per month. For the customers' preference, most of customers high preferred the first style of floor lamp that used weave technique.

The results of hypothesis testing revealed that different quantity of PVA powder and time for to beat the mulberry fiber by machine had different thickness and tear strength at the satistically significant .05 level.

Keyword: Mulberry Fiber, Textile Product, Technical Textile and Lamp

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SECTION III

Development of Women's Pattern Making by the Anatomy Principle

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Abstract: The objective of this study was to experiment on women's pattern making by the anatomy principle using the extra-large size (XL) for the following four body types: inverted triangle body (▽), Apple body (Δ), Round body (○), and hourglass body (⧖). Patterns of the long evening dress and tailoring were made from four kinds of fabrics: satin, chiffon, silk, and tatfita. The standard time of making the pattern and tailoring was recorded and the statistical analysis was presented in terms of percentage and mean. The result was that the average time for tailoring the long evening dress was 22 minutes per one dress and the dress made from tatfita took the shortest time of just 5.45 minutes.

Keyword: Women's Pattern Making, Anatomy Principle, Evening dress, Standard time, Standard Sizes

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SECTION III

Digital Technologies in Textile Art

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Abstract: Today is called as an age of data which is dominated by information, communication and technology-based entertainment. Digital age is a result of rapid visual information-sharing. In this age, technologies enable video sharing, saving every moment as visual data and it is a result of rapid visual and information sharing. . Today, artists use digital technologies as a means of expression besides concepts. Woven textiles are also affected by the technological advances, which is essential for people from antic times to now for covering and protecting themselves from heat and cold. Weaving design is a fine art form and a product of labor including Coptic textiles and European tapestries; it utilized the speed, selections and color options of the digital Technologies after the mechanization and digital technologies in the 20th century. Computerized Jacquard loom is one of the benefits of digital Technologies for weaving complex imagery enabling individual warp threads to be lifted. Today, working, digital cameras, scanners and jacquard looms the textile artist become a selector and technology become a medium serving the artist to show his creativity. In this study, the Works of textile artist will be examined in view of time, technology and communication.

Keywords: Weaving, digital Technologies, jacquard loom

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SECTION III

Eco-Friendly of Textiles Dyeing and Printing with Natural Dyes

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Abstract: This article reports the studies available on the ultra violet (UV) protection property of natural dyes; antibacterial and deodorizing properties of natural dyes; application of natural dyes for textile printing; effect of different mordants and mordanting method; ultrasonic method of natural dyeing. Thermodynamics and kinetics of dyeing with natural dyes have also been discussed.

Keywords: natural dyes, dyeing, textiles, mordant, eco-friendly

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Eco-Friendly Printing of Cotton Fabric Using Natural Dye from Acacia Catechu Wild

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Abstract: Cotton fabric samples were printed with acacia catechu wild using reactive-printing technique has been investigated. The effect of different factors, i.e. quantities of urea, thickening agent and Sodium bicarbonate has been studied. The printed goods were evaluated by measuring the K/S values and the overall fastness properties. The results show that the colour strength (K/S) value of recipe 3 was the best printed result, and the next good result was obtained in the order of recipe 2 and recipe 1. The colour fastness results were ranging between fair and good level.

Keywords: Acacia catechu wild., Thickening, Printing, Textile, Cotton, Natural dyes

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SECTION III

Eco-textiles - Sustainable, Green and Eco-Friendly Textiles

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Abstract: Global warming is the serious issue that the world is now facing and the main reason for this is environmental pollution, which is contributed by many industries throughout the world. Consumers are becoming increasingly very much conscious to environmental friendly consumer goods. They are now much concern about the green activities. They choose products which are non-toxic and cause no harm to both the human society and the environment. This tendency for eco-friendly products has been extended to textile and apparel products, particularly those products which directly come in to contact with the skin for prolonged period of time. Eco-textile is a remedial measure that the textile and apparel industry adopts to reduce this environmental pollution and its commitment to the ecological care. Synthetic fibre clothing is not good for human health and the environment; so one should prefer garments made from natural fabrics like cotton, hemp, wool and silk. Sustainable eco-textiles also use fabrics made from renewable materials like bamboo, soy and Tencel**,** a wood pulp product. Sustainable clothing materials can also be produced from new synthetic options like "POP**,**" fabric made from recycled plastic soda bottles. The products covered under eco-textiles include clothing, towels, bedding, hats, wigs, diapers and other sanitary products, footwear, gloves, chair covers, toys, watch straps, belts, purses etc. These textiles are stipulated several norms and parameters, called eco-standards, regarding fiber processing, production, dyeing and non-toxic handling. It is important to look for such certification on labels to ensure that a product is actually eco-friendly.

Keyword: Eco-textiles, environment, cotton, tencel, eco-standards

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Effect of Tannin Mordant on Dyeing Silk Fabric with Dye from Tropical Almond Leaves

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Abstract: The objectives of this research were to study on color values and colorfastness of silk fabric dyeing with dye from Tropical Almond leaves. The experiment is based on varying mordant at 5 percent and temperature at 90 °C for 40 minutes. The results of color value, it was found that type of mordant significantly different at 0.5 level. The tannin had higher lightness than other mordant (copper sulphate, potassium dichromate and potassium aluminium sulphate). The results of colorfastness to washing, it was found that type of mordant significantly different at 0.5 level. The potassium dichromate also provided a very good levelness (dE* 2.20, colorfastness level 4) while the tannin also provided a good levelness (dE* 3.28, colorfastness level 3 - 4). It is therefore recommended that the use of tannin as mordant to further improve the quality of dyeing silk with natural dye.

Keywords: tannin, mordant, silk fabric

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Efficiency Increase Rate of Standard Pattern Making in Garment Industry by Computer

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Abstract: The objective of this research to studied the increase rate the skills of a garment with a computer. The comparisons of the pattern making skills; five basic styles by computer of students between the fashion design major and the textiles and clothing major in department of textiles and clothing, faculty of Home Economics Technology of Rajamangala University of Technology Thanyaburi. The results showed that; the students in fashion design major has the highest skills, with an average speed of 5.97 minutes, and students of textiles and clothing with an average speed of 6.96 minutes. Finally, the efficiency rate of pattern making by computer to increase also. In addition, two groups of students showed rate skills which found that the rate of increase difference was statistically significant at the .05 level.

Keyword: Efficiency, Increase Rate

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Evaluation of Efficiency of Ease Techniques for Blouse Arm Holes

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Abstract: The objective of this research was the experiment with the ease techniques on blouse arm holes. The fabrics in the testing were thin silk, cotton muslin, and chiffon. Four ease techniques were basting, gathering by iron press, gather sewing, and pucker foot. The experiment engaged with students, dressmaker, and garment factories stitchers. The standard time measurement method was used. Percentage and average techniques were used for the statistical analysis. The results were as follows: The pucker foot technique gave better performance than the others. Concerning the standard time of the four techniques with the three kinds of fabric, the time of thin silk was 0.27 minutes; of cotton muslin, 0.27 minutes; and of chiffon, 0.34 minutes. Thin silk resulted in the strongest seam of 251.31 newton.

Keywords: Blouse Arm Holes, and Ease Techniques, Thin silk, Cotton muslin, Chiffon

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Evaluations of Physical Properties of Twill Weave Morhom Fabric

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Abstract: This research was concerned with the twill weave Morhom fabrics dyed with indigo and natural indigo dyes by exhaustion process. In this experiment, the colour fastness to rubbing was investigated, the results of which showed fair to good fastness, where as the colour fastness to in washing, water, perspiration and light were at a good to very good level. The physical properties of fabric; weight, thickness, tensile strength, tearing strength and dimensional stability to washing were also evaluated.

Keywords: Morhom fabric, Twill weave, Indigo dyes, Tung hog ,colour fastness

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Evaluation of The Efficiency of Flat Pattern Making and Draping Techniques

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Abstract: The objective of this research was to compare between two patternmaking techniques- The flat pattern making and the draping techniques. The sampling was the fashion model code no. J:C-W 0181 of Jaspal Company Limited, Bangkok, Thailand. In addition, the standard time for pattern making was also checked while making the patterns and sampling by the three patternmakers. The products were worn by the six models in order to tell the satisfactions. The statistical analysis was used to calculate was percentage and means. The results of the research were discovered that the draping techniques were used for 3.15 hr. for the first session and 1.35 hr. for the second, and the flat pattern making technique was 7.08 hr. for the first session and 4.53 hr. for the second. Additionally, the research was found that the models satisfied 90 percents with wearing the samplings using the draping techniques but 46.67 percents of satisfaction for wearing the sampling using the flat pattern making. In conclusion, draping techniques used time less than the flat pattern making techniques and the models preferred the dresses made from the draping pattern making much more.

Keywords: Patterner Garment, Pattern making, and Draping

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Factors Affecting Banding with Special Reference to Clothing Industry

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Abstract: Brand and brand image are the important factors that have effects on the consumers in clothing industry. Through its basic function, branding generally serves for the products being well known and differentiated from the substitudes.and it is a powerful tool for consumer loyalty. But branding in clothing may have a specific importance. Cloth is a kind of product, which is worn by the consumer and carried on the body. It is much more personel than anything used by the person, like any machinery or furniture in his office or house. It is like a complimentary tool to demonstrate who the person is, what he wants to be, his attitude to life and his position in the society. Brands may help people to transmit their own image, serving as a symbollic tool. This paper aims to outline the relationship between branding and clothing, considering the leading parameters like the topics as motivation process in wearing cloths, need for clothing, purchasing decisions and the relation between personality, clothing and brands, to help developing strategies for clothing companies in branding process. Finally, an analysis has been made about the degree of influence of the parameters considered.

Keywords: branding, clothing, brands, apparel

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Lotus Pattern Design on Fabric for the Textile Product Development

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Abstract: The project of lotus pattern design on fabric for the textile product development was conducted for purpose of studying any method to design the lotus pattern on fabric which would lead to the development of any house decoration and surveying the consumer satisfaction with the fabric product printed with the lotus pattern. In this regard, five methods of the lotus pattern design were used with four types of fabric, i.e. cotton cloth, silk, linen and mixed fabric. Thereinafter, two of these methods were selected to produce five types of product and then the survey on the consumer satisfaction was conducted. The study revealed that the methods of plain painting on silk and grid pattern overlapping together with wax rolling on silk were suitable for making the lotus pattern on fabric for the textile product development. For the consumer satisfaction with the fabric product printed with the lotus pattern by both methods, the study showed that the consumers were highly satisfied with the harmonization of the lotus pattern with various house decorations, the novelty of the creative method of pattern design for any product, the creativity of the lotus pattern design for any product, the color suitability and the product attraction. For this regard, the total average of the second method was shown at 4.42 while the first method was shown at 4.26.

Keywords: lotus pattern design, textile product

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Mysterious Design

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Abstract: Resist the urge to protect the people has been exposed clothing has become a way of life today. Formed to expand the concept of lifestyle fashion with the beginning of people's clothes, fashion designers and clothing experts have their say in elections, people have begun to dress. Have made it even more appealing fashion designs created to be different than usual. And for those who want to be different each time managed to almost intact. Reached levels that the advances in technology today, a very different fashion lines and designers were brought to life the extraordinary. I'd done the usual with this design by putting forward a different design patterns and sewing techniques I have created a ladies suit. The purpose of my design that I created, jacket, worn through in one piece of fabric zipper to reveal a form can be obtained. This design is to have a design different from the other jacket and skirt the like in a work not coincide therefore thought to be important. I've done this work, further expanding the use of different groups and this type of clothing designs in terms of pioneering designers thought to gain a new perspective.

Keywords: mysterious design, fashion

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Natural Dying of Hemp Yarns

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Abstract: With its exceptional physical properties, high comfort, excellent durability as well as relatively eco-friendly manufacturing process, hemp is regarded as one of the highest quality fibers and is in high demand. Recently, there has been a national strategic plan which supports cultivation of hemp as a new economic plant in Thailand, especially for the hill tribe people located in the northern area. Meanwhile, increasing worldwide environmental awareness of the manufacture and application of synthetic dyes in textile industry, there has been growing interest in natural dyes. This research was carried out to investigate dyeing of 1908 denier industrial hemp yarn and 2295 denier hill tribe hemp yarn with four natural dyes; lac (Laccifer lacca Kerr.), African marigold (Tagetes erecta L.), ma phut (Garcinia Dulcis (Roxb.) Kurz) and annatto (Bixa orellana L.). The color yield, color coordinates and color fastness to washing and light of the resultant dyed yarns were also determined.

Keywords: Hemp, Natural dyes; Lac; African marigold, Ma phut, Annatto

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Occupational Safety and Health Management System in Textile Industry - a Continual Improvement Approach

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Abstract: This paper shares an experience on implementing the statutory elements of an occupational safety and health management system model in the working environment of a textile testing laboratory in Hong Kong. A continual improvement, Plan-Do-Check-Act (P-D-C-A), approach was used. In the statutory models in Hong Kong, 14 elements, (i) safety policy, (ii) safety organization, (iii) safety training, (iv) in-house safety rules and regulations, (v) inspection programme, (vi) personal protection equipment programme, (vii) accident / incident investigation, (viii) emergency preparedness, (ix) control of sub-contractors, (x) safety committee, (xi) job hazards analysis, (xii) safety promotion, (xiii) process control programme and (xiv) health assurance programme, were contained. Through the implementation of these elements in a continual improvement approach, some benefits wereobserved, thus discussions were made based on those benefits observed.

Keywords: Continual improvement, Safety and health management, Plan-Do-Check-Act

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Properties and Application of Milk Fiber in The Nonwoven Fabric

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Abstract: The properties, developing history, production process, morphological structure and other features of milk regenerated protein fiber are introduced. It is pointed that milk fiber is a new type environmental protection and anti–bacterial fiber, it has a wide application prospect in the developing nonwoven fabric productions.

Keywords: milk fiber, property, constitution, processing technology, nonwoven fabric, pro- duction, development.

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Properties and Product development and Application of Soybean Protein Fiber

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Abstract: In this paper, the tested methods, the used standard and the composition etc. of soybean protein fiber are introduced, a series of basic properties are tested, and the relationship between structure and properties has been dealt with, a series of basic data of physical and chemical characteristics of the fiber is given. It is pointed that soybean protein fiber is one kind of new-type functional fiber, which have good moisture absorption behavior, good permeability, natural micro organism resistance, excellent dyeing properties, higher dye-fixing percentage, and better biological activity etc. When developing new type products, we must lay stress on its excellent properties, and develop the new-type products that display the good properties of soybean protein fiber.

Keywords: soybean protein fiber, property, constitution, production, product development, application

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Properties of Silk Fabric Dyed with Eucalyptus, Quercetin, Rutin and Tannin Using Padding Techniques

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Abstract: Natural dyes from eucalyptus leaf extract, quercetin, rutin and tannin were applied to silk fabric by the padding techniques, namely the pad-batch and pad-dry techniques under different condition. In this experiment, ferrous sulfate was used as a mordant. The dyeing properties were evaluated by measuring *K/S* values and *CIELAB*. The different fastness properties were evaluated. The effect of dyes at different concentration levels with respect to their colour strength was also studied.

Keywords: natural dyes, pad-dry, pad-batch, eucalyptus, quercetin, rutin, tannin, silk, dyeing

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Setting-up an Occupational Safety and Health Management System in a Textile Testing Laboratory

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Abstract: Competing in a global market arena, with increasing quality demands and price-sensitive competitions, has high lighted the awareness of continuous improvements and breakthrough in quality to achieve competitive advantages. Many organizations have been taking their initiatives with adopting the ISO 9000 quality assurance system toward total quality management (TQM). Moreover, the increasing awareness and importance of the environmental and safety compliance requirements also imposed pressures on the organizations. This paper reported a local case of how the top management of a commercial textile testing laboratory in Hong Kong realised that other than "quality", how "safety and health" is also played an important role to the business and the actions taken. In this paper, the story of developing and implementing an occupational safety and health management system were revealed.

Keywords: Safety and health management system, ISO, TQM, Quality

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SECTION III

Studies on Kinetic and Thermodynamic Parameters of Natural Dye Extracted from Punica granatum on Protein Fibres

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Abstract: Punica granatum has been used as a dye for colouration of wool and silk fibres in absence and presence of inorganic salts or mordants. Colouration of those protein fibres with such colourant from an acidic dye bath (pH ~ 4.0) produce appreciable colour yield. Treatment of wool and silk with the solution of any of aluminium sulphate and ferrous sulphate at 70^0C temperature maintaining a material-to-liquor ratio of 1:40 for duration of 45 minutes prior to dyeing produce significant improvements in the property profiles of dyed substrates. Such pretreatments specially imparted higher order of depth of shade, fastness to light of the dyed substrates and colour retention on washing than those of the respective dyed substrates having not been subjected to such pretreatments with the above inorganic salts. Methanol extract of Punica granatum has been used for determination of kinetic and thermodynamic parameters on wool and silk fibres. Diffusion co-efficient, time of half dyeing ($t_{1/2}$), adsorption isotherm, standard affinity and heat of dyeing has been calculated to assess kinetic and thermodynamic parameters. Measurement of kinetic parameter of dyeing indicates that wool has a lower rate of dyeing as compared to that of silk fibre for application of Punica granatum. Studies on measurement of adsorption isotherm indicate that this dye has been adsorbed on protein fibres chiefly following Langmuir adsorption mechanism.

Keywords: Adsorption isotherm, Kinetic parameters, Punica granatum, Silk, Wool

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Sustainability of Green Fashion

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Abstract: The world is undergoing through a major natural crises which has affected all industries including fashion and luxury. Consumers might feel a need to refocus on what is really important in their lives, especially their health via reconnecting with nature. Green is in fashion – if not as a colour, then at least as a quality term for textiles manufactured using environment friendly and ethically correct production processes. The present paper aims to explore the ways and means to popularize green clothing (also known as natural clothing, eco-friendly, alternative and organic clothing) in fashion and make it a way of life. It is based on a survey of leading textile manufacturing units in Ludhiana and responses of 200 customers selected from all zones of Ludhiana city in the year 2009. The results show that while manufacturers have the constraint of cost and acceptability by the customers in the present scenario, more than three-fourth customers not only lack awareness about green clothing being healthier and safe choice for them but also for the environment from the hazards of textile manufacturing processes. Further, they also suggested that the awareness about green clothing, their ready availability and affordable cost may make them popular among the common people. It should be insensibly advertized that the green clothing is environment friendly. Green clothing reduces harm to human and environmental health by implementing improved manufacturing measures and eliminating contaminated waste. An overwhelming majority of the customers also felt a strong need for saving the environment. In the light of empirical evidence, it is suggested that government should organize informative programs to make the public aware about need for green clothing, processes and dyes used in other clothes that adversely affect the nature, their processing with heavy chemical agents which are not only harmful and have enduring effects on environment but also on the health of people. In the larger interest of a nation and its people, government should provide

liberal subsidies to units engaged in manufacturing green clothes.

Keywords: Green clothing, organic clothing, natural fibers, environmental hazards,

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Tailored Jacket Pattern for Particular Shape Women

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Abstract: The objective of this study was to experiment on making women tailored jacket patterns of England, Germany and Thailand. The experimental group consisted of eight people: two teachers, two students, two community members and two dressmakers. The patterns were based on Thai women standard shape "size L" for five groups of particular different shape of women 1. Houglass 2. Apple 3. Pear 4. Round 5. Rectangle. The results from statistical analysis of the standard time study in making the patterns were presented in terms of percentage and mean. It was found that making the patterns of Thai pattern making was simple and consumed by the minimal average time of 70.29 minutes, English took 87.54 minutes and German took the highest time of 94.7 minutes.

Keyword: Tailored Jacket, and Patterns for Particular Shape Women

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Testing of Silk Yarn for Weaving Kab Bua Fabric

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Abstract: Kab Bua fabric is a brand identity of Ubon Ratchathani. It has a unique pattern that consisted of 4 components: Ikate, Khit: Chok and Tew. It makes from cotton or silk. However, silk yarn has quite low quality due to insufficient food for cocoon. The paper compare the quality of silk yarn of research objective is comparison quality of silk yarn of Ban Bon, Sisaket, and Phetchabun for having a database to improve and develop the quality of Ban Bon's silk. The weight of Ban Bon, Phetchabun, and Sisaket were 0.8 g, 0.6 g, and 0.5 g, respectively. The value of denier was 130.2, 97.3, and 79.0 for Ban Bon, Phetchabun, and Sisaket. The most strength is Ban Bon (3.77 g/D) but it has worse in elongation. The surface morphology from SEM photograph of silk fiber degummed of Phetchabun and Sisaket are more smooth and fine than Ban Bon.

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Thai Children Standard Sizes

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Abstract: The objective of this research was to determine Thai girls and Thai boys standard sizes. Thai body structure data step 4, collected in 2000-2001 of Thai Industrial Standards Institute were used. There were 2,288 girls samples and 2,233 boys samples aged 2-15 years. The sizes had been divided into seven intervals: extra extra small (XXS), extra small (XS), small (S), large (L), extra large (XL), and extra extra large (XXL). Means of body measurements were assigned as medium size. The results were as follows: 1) Thai girls medium sizes were 8-9 years of aged. Thai girls medium sizes (M) were 128.00 cm height, 64.50 cm chest, 57.00 cm waist, and 70.00 cm hip. 2) Thai boys medium sizes were 8-9 years of aged. Thai boys medium sizes (M) were 129.00 cm height, 64.50 cm chest, 60.00 cm waist, and 68.50 cm hip.

Keyword: Thai children standard sizes, Thai girls standard sizes,and Thai boys standard sizes

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The Design of Special Embossed Loom with Jacquard for Developing Community Product in Economic

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Abstract: The research was an objective to study the weaving proves in the central of Thailand. It was focused on problem study and design consumption by special loom as jacquard for improving the weaving techniques. This research not only data analysis ofr jacquard production but also transfer knowledge as economic efficiency product by workshop. This study was an experimental development research by purposive sampling. The information were surveying from 3 groups. The first was 25 people what using native woven in north central of Thailand as Nern-kham woven cluster at Nern-kham district, Chainat province. The second was 25 people what using flying shuttle woven from Wat nam Tao in Ma-ha Rat district, Ayutthaya province. And, 50 people what using produced loom. The results were evaluated in jacquard satisfaction as reduced time production by using 120 heddles, ease of jacquard setting up that was delicate and versatile styles on native woven such as Yok-Dok, Yok-kit, Teen-jok, Praw-wa, and the other native styles. The heddles tool was Rectangular and C-type steel whatever it was greater durability material. The additional, this product had the returnable storage cards that they were controlled by cylinder. The working area was individual adjustable. However, the combination of this product into the traditional loom weaving must be controlled by specialist. This produced machine was ease movement and reduced torn warp yarns. The fabric was rolled by hand lever to turn the both side together. The heddle was raised by foot lever in rhythmic weaving. The produced jacquard was a similar production cost as the same product but it had better efficiency and reasonable price. It was suitable for new weaver thus had a background in basis weaving for making the high efficiency production and good quality product. Thus, the machine had an axil and gear for reed locked and hit regularly

width fabric. The summarize research concerned with process, technique, weaving process. The main was jacquard system of heddle lift system. It promoted the development knowledge for semi-automatic loom weaving thus motor and electricity combination. Moreover, the design of jacquard for loom weaving was basement knowledge of developing the new equipment, tools, pattern for textile product in ecology economical furthermore.

Keywords: heddle lifting, Jacquard, textile product, ecology economical

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SECTION III

The Development of Green Packaging from Banana Fiber for Instant Food Product

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Abstract: This research examined the green packaging development from banana fiber for instant food products. The purposes of this study were (1) to construct, approve and develop the sketch design, (2) to develop banana fiber package prototypes that protect food products inside, (3) to eliminate packaging environment problems, prevent natural resource and save energy in package processing, and (4) to design packaging for instant banana food products. Method and procedure of this study were divided into 2 categories: Part I Studying banana fiber properties data suitable for making packaging and Part II Studying consensus data to develop green packaging from banana fiber, for instant food products using a questionnaire, after testing packages such as stand-up pouch, paper box, paper cup, and zip lock paper bag, to survey the appropriateness and the suitability for practical green packaging for instant banana food products.
The findings were as follows: (1) Satisfaction of every factors were good level and every packaging patterns conformed to the identity design in structural and graphical packaging. (2) As a result of studying structural packaging factors, it indicated factors that had excellent satisfaction level in every packaging patterns were packaging with aesthetic and elegant ones, identity packaging, and souvenir packaging. The least satisfaction in every patterns were average in storage packaging because of its easier to biodegradation. (3) For studying graphical packaging factors, it found that all of factors in every patterns had excellent satisfaction

level such as identity brand alphabet and easier to recognize as follow.

Keywords : green packaging, banana fiber, instant food products

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SECTION III

The Development of Home Textile Product from Hibiscus Tiliaceus Fiber

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Abstract: The research aims at the developing and applying Hibiscus teliaceus fiber for home textile. The study, development and experiment focused on production/ process and properties of fiber, yarn, and fabric. From the experiment, it was found that fiber was removed from the trunk and then water rating could be used successfully for separating fiber from sheath of Hibiscus teliaceus. The microscopically longitudinal studies showed roughness and flat surface. Fiber width, yarn number and strength of fiber were 0.3 millimeter, 651.9 Denier and 10.93 Newton, respectively. There are three conditions for fiber treatments viz. without treatment, scouring and bleaching. The results showed that yarn number of Hibiscus teliaceus fiber without treatment was 7,005 Denier. For the scouring and bleaching treatment, the yarn number was 8,343 and 6,061 Denier, respectively. The yarn was spined as "Z" twist and number of twists were 6, 7 and 5 twists per inch. The tensile strength were 134.60, 102.14 and 88.28 Newton. The fabric made from 62 threads per inch of cotton yarn for warp direction and Hibiscus teliaceus yarn for weft direction shown the tensile strength values of 1695.14, 1435.14 and 1312.23 Newton were found for fabric made from weft yarn of Hibiscus teliaceus fiber without treatment, scouring and bleaching treatments, respectively. The fabric made from Hibiscus teliaceus fiber and applied for home textile shown good physical properties and also beautiful of home textile products thus might be superior for textile uses. It is therefore conclusive that the Hibiscus teliaceus

fiber from the research can be developed and commercialized for the home textile.

Keyword: Home textile, Hibiscus tiliaceus, Natural fiber, Natural yarn, Natural products

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SECTION III

The Development of Indicators Marking the Characteristics of Creative City in the Design of Bangkok

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Abstract: The objective of this research was to develop indicators marking the characteristics of the city of design for Bangkok. The study aimed to study important characteristics used by UNESCO in appointing six cities as creative cities of design. Then, a set of indicators for being creative city of design was identified from the UNESCO case studies of the six cities. Finally, the indicators marking the characteristics of creative city of design was developed for estimating Bangkok. The study is a descriptive research design, the researcher, therefore, had studied and analyzed the documents, textbooks, academic articles, and relevant research. Lessons from the cases of six cities comprising Shenzhen and Shanghai of China, Montr?al of Canada, Berlin of Germany, Kobe and Nagoya of Japan was chosen to be cases for studying and reviewing. The Delphi technique was used. The samples of this research were 49 experts from public and private organizations in Thailand. The research instrument was questionnaire for inquiring the opinions of experts divided into three parts. Part one was information about the respondents; the other two consisted of questions of 5- level-rating scale for determining and assessing indicators marking the characteristics of creative city of design for Bangkok. Part two following UNESCO model, but in part three, there were additional characteristics. The research results reflected that 9 aspects to determine the city of design which covered 25 indicators including 1.Cultural infrastructures consisted of 3 indicators that include Number of the museums or art studios, Number of the national or city libraries and Number of Opera houses/Exhibitions. 2. Finances and Budgets consisted of 1 indicator that includes Source of funds from all sectors. 3. Dissemination and promotion of culture consisted of 3 indicators that include Number of Designed activities and events, Variety of cultural events and Number of performances or exhibitions on creative design held in the city. 4. Creative

industries and clusters consisted of 7 indicators that include Number of the creative industry in the design, Number of the creative entrepreneurs, The aggregation / association of industry and the creative design, Number of the creative designers, The creative classes and labor market conditions, Economic value of creative industries and Sales of the creative industry per year. 5. Awareness and recognition by the public consisted of 1 indicators that include Number of the media / publications, local / domestic related. 6. Contemporary arts and designers consisted of 3 indicators that include Number of the famous designer of the city. 7. Education / research / capacity building consisted of 3 indicators that include Number of the education and training programs related to creative design, Number of the academic institutions was to open the courses / programs related to creative design and Number of graduates each year in the courses / programs of study related to creative design. 8. Management of the city consisted of 3 indicators that include Policies and strategic plan in urban development, Space and facilities / infrastructure of cities, such as banks/ hotels / shops / restaurants and others and urban layout planning; and 9. Innovation and creativity consisted of 1 indicator that includes numbers of innovation, invention and creative product and service. This research developed the indicators for assessing creative city of design for Bangkok, and suggested that they can be applied to other cities.

Keywords: - creative economy, creative city, creative city in the design (fashions. textiles and related in field industries)

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SECTION III

The Factors of Lingerie Purchase Intention Influencing RMUTP Students

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Abstract: The purpose of this study is to explore the factors of lingerie purchase intention influencing Rajamangala University of Technology Phra Nakhon students. A questionnaire used in the study included questions about price, promotion, product quality, place and purchase reasons. The respondents are female students, 18 to 22 years of age. The findings showed most of them opted for only good quality lingerie from sellers that offered promotions such as discounts, were willing to pay between 100 to 500 baht, and bought it for use in daily life to demonstrate their love for modern style. The future study might aim at lingerie manufacturers.

Keyword: Lingerie, Purchase Intention

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The Influential Factors of Impulse Buying Behavior on Causal Wear in Hong Kong

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Abstract: Owing to the intense competition within the fashion and clothing industry, marketers and retailers attempt to formulate various strategies for enhancing their own business performance and gaining market share. In order to raise competiveness efficiently and effectively, a deeper understanding of consumer behavior becomes a crucial task. While the significance of impulse buying behavior is addressed over years [1,2], a further analysis may provide insight on it in particular on fashion and garment products. Impulse buying behavior exists in various product purchases and in this research study impulse buying is focus on casual wear for the young people (aged 18-25) in Hong Kong. Through identification and investigation on the potential factors which may trigger impulse buying behavior on casual wear, the relationships between this dependent variable and various independent variables are revealed. The significant factors influencing impulse buying on casual wear purchases are: money availability, self-monitoring and shopping enjoyment. Different statistical techniques on reliability test, correlation analysis and multiple regression analysis are used to find the relationships between impulse buying behaviors to time factor, money availability and self-awareness. The findings would contribute to a better understanding of impulse buying behavior and the significant factors which trigger the behavior.

Keywords: Impulse buying, casual wear, fashion and textiles.

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SECTION III

The Taste in Organic Cotton Bedding Products Among Thai Household Consumers

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Abstract: The purpose of this study is to examine the taste of Thai household consumers in their purchase of bedding products. In the current wake of health consciousness, many manufacturers resort to new innovations, for example, 100% organic cotton, natural fibers and nontoxic materials. The researcher collected data through questionnaires from department store customers in Bangkok. It was found that the consumers tended to choose bedding products by color, fabric, design, price and health concerns, and most people chose organic cotton fabric because they felt comfortable in their sleep and would tned to avoid bedding products made of harmful chemicals. Bedding products manufacturers are recommended to keep improving their product quality and respond to customer concerns.

Keywords: organic cotton bedding, Thai housewives

UV Protection Properties of Wool Fabrice Dyed with Eucalyptus Leaf Extract by the Padding Techniques

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Abstract: This research was concerned with dye extraction from the leaves of eucalyptus and with the application of this dye for wool fabric dyeing by using two padding techniques, namely the pad-batch and pad-dry techniques under different condition. It was observed that with an increase in the dye concentration, the ultraviolet (UV) protection factor (UPF) values ranged between very good and excellent for wool fabric. The colour fastness to light and rubbing after dyeing the wool fabric treated with the mordant was investigated, the results of which showed fair to good fastness, whereas the colour fastness to washing was a good to very good level. The results confirmed that natural dye from eucalyptus leaf extract have potential applications for fabric dyeing and producing UV protective wool fabric.

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Value-Adding Strategies for Silk Garments by Redesigning and Patterning with Embroidery

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Abstract: Silk is a natural fiber which can be woven into textiles. Nowadays, silk garments are less popular in Thailand due to its old-fashioned look. The purpose of this study is to discover strategies to add value to silk garment. It was recommended silk manufacturers innovate their products by creating new designs and patterns, especially, with embroidery. Therefore, silk garments need to be designed with embroidery and to use natural raw material. The data for this project were provided by Patcharee Thai Silk Shop. Most customers made their purchase decision on the basis of design and fabric quality. Silk garment improvement should include new pattern designs and the company should provide workers with skill and state-of-the-art knowledge so that new models can be developed to promote the industry.

Keywords: embroidery, silk

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SECTION III

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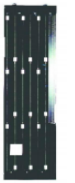

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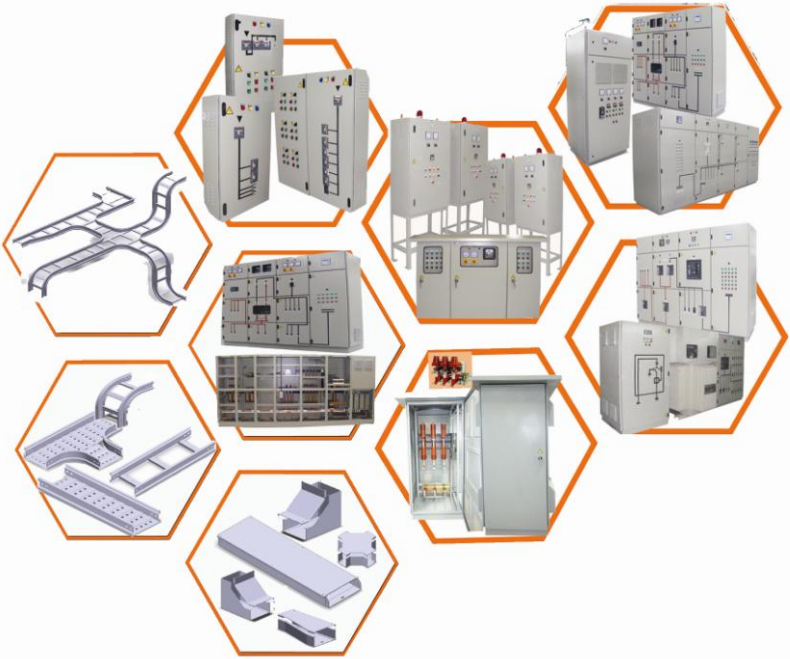

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