

TEXTILES OF THE FUTURE

ISKA 2010

**INTERNATIONAL SYMPOSIUM
IN KNITTING AND APPAREL**

~ BOOK OF ABSTRACTS ~

**19-20 November 2010,
Iași, Romania**

**Faculty of Textiles – Leather and Industrial Management
Bd. Prof.dr.doc. Dimitrie Mangeron, 29, Iași**

Organized by



**« GHEORGHE ASACHI » TECHNICAL
UNIVERSITY OF IASI**



**FACULTY OF TEXTILES – LEATHER AND
INDUSTRIAL MANAGEMENT
- DOCTORAL SCHOOL -**



**THE ASSOCIATION OF THE FACULTY OF
TEXTILE LEATHER AND INDUSTRIAL
MANAGEMENT GRADUATES**



**THE GENERAL ASSOCIATION OF
ENGINEERS IN ROMANIA**

With the support of

Ministry of Education, Research, Youth and Sport

National Authority for Scientific Research



AUTORITATEA NATIONALA PENTRU CERCETARE STIINTIFICA

International Scientific Committee

Chair:

Carmen LOGHIN, Romania

Members:

Vladan KONKAR, France

Ana Marija GRANKARIC, Croatia

Arzu MARMARALI, Turkey

M.Cetin ERDOGAN, Turkey

Jiri MILITKY, Czech Rep.

Lubos HES, Czech Rep.

Jaroslav BERAN, Czech Rep.

Zoran STEPANOVIC, Slovenia

Yordan KYOSEV, Germany

Abhijit MAJUMDAR, India

Savvas VASSILIADIS, Greece

Emilia VISILEANU, Romania

Aristide DODU, Romania

Stan MITU, Romania

Costea BUDULAN, Romania

Emilia FILIPESCU, Romania

Pulferia NICOLAIOV, Romania

Ecaterina PINTILIE, Romania

Constanta COMANDAR, Romania

Augustin MUREȘAN, Romania

Mariana URSACHE, Romania

Mirela BLAGA, Romania

Viorica CRETU, Romania

Organizing Committee

Chair:

Mariana URSACHE

Members:

Dorin DAN

Laura MACOVEI

Daniela FĂRÎMA

Manuela AVĂDANEI

Irina IONESCU

Luminița CIOBANU

Irina TARABOANȚA

Mihai PENCIUC

Ionuț DULGHERIU

Secretary

Liliana LUTIC

Stelian FILIPESCU

Mihaela PERDEVARA

Elena FILIPESCU

Ramona CIOBANU

Dorin IONESI

Topics

1. New materials, functional and technical textiles
2. High performance fibres and yarns
3. Design and product development
4. IT Applications; CAD/CAM systems for knitting and clothing
5. Developments of technologies and equipments
6. Management, marketing and quality assurance

SYMPOSIUM PROGRAM:

Friday, November 19 th , 2010	
Hour	Activity
09:00-10:00	Participants registration, Tex1 Building, Ground Floor
10:00-10:15	Welcome and Opening Remarks "I.C.Stefănescu" Audithorium, Tex1 Building
10:15-11:15	Plenary Session 1: Keynote presentations „I.C.Stefănescu” Audithorium, Tex1 Building Moderator: Carmen Loghin
	10:15 – 10:35 Ana Maria Grancaric <i>University of Zagreb, Faculty of Textile Technology, Croatia</i> INTERFACE PHENOMENA OF TEXTILES
	10:35 – 10:55 Lubos Hes <i>Technical University of Liberec, Czech Republic</i> PRINCIPLES OF CLOTHING COMFORT AND THEIR APPLICATION ON EVALUATION OF THERMAL COMFORT OF BEDSHEETS
	10:55 – 11:15 Serban Strătilă <i>ASTRICO NORD EST, Piatra Neamț, Romania</i> FROM PRODUCERS ASSOCIATION TO TEXTILE CLUSTER
11:15-11:45	Coffee Break
11:45-13:15	Plenary Session 2: Scientific papers I.C.Stefănescu Audithorium, Tex1 Building Moderators: Mariana Ursache,
	11:45 – 12:00 Ausma Viļumsone, Inga Dabolina <i>Riga Technical University, Institute of Textile Materials Technologies and Design Latvia</i> COMPUTER AIDED GARMENT DESIGNING
	12:00 – 12:15 Claudia Niculescu ¹ Sabina Olaru ¹ , Adrian Salistean ¹ , Emilia Filipescu ² , Manuela Avadanei ² ¹ <i>The National Research and Development Institute for Textiles and Leather, Bucharest, Romania,</i> ² <i>”Gheorghe Asachi” Technical University of Iasi, Romania</i> 3D SCANNING TECHNOLOGY – A NEW PERSPECTIVE IN GARMENT MANUFACTURING

	<p>12:15 – 12:30 Anca-Dana Bendrea <i>"Petru Poni" Institute of Macromolecular Chemistry, Iași, Romania</i> MULTIFUNCTIONAL TEXTILE COMPOSITE BASED ON POLY(THIOPHENE)S CONTAINING THERMOTROPIC MOIETIES. SYNTHESIS AND CHARACTERIZATION</p> <p>12:30 – 12:45 Mihai Penciu, Mirela Blaga <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> PRINCIPLE OF CREATING 3D EFFECTS ON KNITTED FABRICS DEVELOPED ON ELECTRONIC FLAT KNITTING MACHINES</p> <p>12:45 – 13:00 Elena Filipescu, Mitu Stan (1) <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> 1. A NEW APPROACH IN THE FEMALE BODY FORM CHARACTERIZATION FOR CONSTRUCTION OF INDIVIDUAL CLOTHING; 2. STUDY ON VIRTUAL MANNEQUIN THE 3D FIT GARMENT SIMULATION</p>
13:15-13:45	<p>Students Fashion presentation Tex1 Buiding, "Cassasovici" Library Moderator: Antonela Curteza</p>
13:45-15:15	Lunch break
15:15-16:30	<p>Plenary Session 3 : Scientific papers Council Room, Tex1 Building, Ground Floor Moderators:</p>
	<p>Zoran Stjepanovic¹, Andreja Rudolf¹, Simona Jevšnik², Andrej Cupar¹, Vojko Pogačar¹, Jelka Geršak¹ ¹<i>University of Maribor</i>, ²<i>Academy for design, Ljubljana, Slovenia</i> RECONSTRUCTION OF A 3D BODY SCAN MODEL FOR VIRTUAL GARMENT PROTOTYPING</p> <p>Raluca Maria Aileni, Daniela Farima, Mihai Ciocoiu <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> 1. REALISTIC BODY MOTION SIMULATION; 2. SIMULATION OF DEFORMABLE TEXTILE SURFACE FOR GARMENTS</p> <p>Abhijit Majumdar¹, Mirela Blaga², ¹<i>Department of Textile Technology, Indian Institute of Technology, Delhi, India</i>, ²<i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> PREDICTION OF THERMAL PROPERTIES OF KNITTED FABRICS USING ARTIFICIAL NEURAL NETWORK</p>

	<p>Ancuta Elena Tulbure¹, Radu Cezar Doru², Podaru Sebastian Andrei¹, Atodiresei Gheorghe Virgil¹ ¹<i>The Academic Federation of Scientists</i>, ²<i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> METHODS OF EVALUATION OF THE PRESSURE EXERTED BY THE MEDICAL STOCKINGS</p> <p>Mariana Păștină, Marta-Cătălina Harnagea, Aura Mihai, Stan Mitu, Florentina Harnagea <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> ARCHITECTURE OF A FOOTWEAR COLLECTION ASSOCIATED TO CUSTOMIZED FOOTWEAR DESIGN</p> <p>Marius Butuc¹, Costea Budulan¹, Gabriela Bohm² ¹<i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> ²<i>University of Oradea, Romania</i> RESEARCH REGARDING TEXTILE ARTICLES WITH THERMO-REGULATING PROPERTIES</p> <p>Aurel Popp, <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> 1. THE ANALYSIS OF ULTRASONIC WELDING PROCESS DEPENDING ON THE THERMAL AND ACOUSTIC EFFECTS 2. PROCESSING OF TEXTILE MATERIALS WITH LASER BEAM</p>
16:30-17:00	Coffee Break
17:00-17:30	Poster Session 1 Tex1 Building, Ground Floor
18:00	Cocktail

Saturday, November 20 th , 2010	
Hour	Activity
10:00-11:30	<p>Plenary Session 4: Scientific papers Council Room, Tex1 Building, Ground Floor Moderators: Mirela Blaga, Ausma Vilimsone</p>
	<p>Aristide Dodu¹, Dan Dorin², ¹<i>The Academy of Technical Sciences from Romania</i>, ²<i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> MEDICAL TEXTILE MATERIALS FOR IMPLANTATION INTO HUMAN BODY</p> <p>Mirela Guignard¹, Abhijit Majumdar², Luminita Ciobanu¹, Daniela Farima⁴, Mihai Ciocoiu¹ ¹<i>"Gheorghe Asachi" Technical University of Iasi, Romania</i>, ²<i>Department of Textile Technology, Indian Institute of Technology, Delhi, India</i> BAMBOO - A NEW TEXTILE RAW MATERIAL</p>

	<p>Mihaela Hritcu¹, Radu Cezar-Doru¹, Aurelia Grigoriu¹, Loti-Cornelia Oproiu² ¹Gheorghe Asachi" Technical University of Iasi, Romania ²ICECHIM, Bucharest, Romania THE PERFORMANCES OF A BIOMATERIAL WITH ANTI-ALLERGICAL PROPRIETIES</p> <p>Eveline Popovici¹, Narcisa Vrinceanu¹, Iulia Alexa¹, Claudia Mihaela Hristodor¹, Diana Coman² ¹Tal.I.CuyaȚ Universitz from Iasi, ²Țlucian BlagaȚ Universitz from Sibiu CHARACTERIZATION OF SOME FIBROUS SUBSTRATES SURFACES COATED WITH Ag-DEPOSITED TIO₂ NANOPARTICULES, WITH POTENTIAL APPLICATION IN MULTIFUNCTIONAL FINISHED</p> <p>Stela Balan, Irina Tutunaru, Marcela Irovan, Maria Burlea Technical University of Moldova, Chisinau, Rep. of Moldova DEVELOPMENT OF THE SPECIAL FISHERMEN'S WEAR ASSORTMENT</p> <p>Marcela Irovan, Irina Tutunaru, Stela Balan, Natalia Bunica Technical University of Moldova, Chisinau, Rep. of Moldova REQUIREMENTS FOR HUNTERS' PROTECTIVE EQUIPMENT ELABORATION</p> <p>Irina Tutunaru, Stela Balan, Marcela Irovan, Elena Melnic Technical University of Moldova, Chisinau, Rep. of Moldova ASPECTS OF WOMEN OFFICE CLOTHES DESIGNING</p> <p>Gabriela Vintea, "Gheorghe Asachi" Technical University of Iasi, DESIGN ELEMENTS FOR MANUFACTURING LINES IN THE CLOTHING INDUSTRY</p> <p>Agis Papantoniou¹, Savvas Vassiliadis¹, Mirela Blaga², Panagiotis Skordilakis¹, Tryfon-Dionysios Karagiannis¹, Niki Mela¹, George Logios ¹Technological Education Institute of Piraeus, Greece, ²Gh. Asachi Technical University of Iasi, Romania THE APPLICATION OF THE SEMANTIC WEB AND ITS TECHNOLOGIES IN THE TEXTILE & CLOTHING SECTOR</p>
11:30-12:00	Coffee Break
12:00-12:30	Poster Session 2 Tex1 Building, Ground Floor
12:30-12:45	Closing Ceremony of Symposium Council Room, Tex1 Building
12:45-14:00	Lunch Break
14:00-20:00	Local visits, site seeing Departure location: Parking area of the Faculty (Tex1)

LIST OF POSTERS

Friday, November 19 th , 2010	
17:00-17:30	POSTER SESSION 1 Tex1 Building, Ground Floor
1. Vasile Blașcu <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> INVESTIGATIONS IN TENSILE PROPERTIES OF WOOL IN DIFERENT CONDITIONS OF TESTING	
2. Vasile Blașcu <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> STRUCTURE-PROPERTIES CORRELATIONS OF SOME POLY(ETHYLENE THEREPHTALATE) FIBRES	
3. Iulia Balau-Mandru , Tudorel Bălău-Mîndru, Irina Tărăboanță <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> SPIDER SILK – PROPERTIES AND APPLICATIONS	
4. Iulia Balau-Mandru , Tudorel Bălău-Mîndru, Irina Tărăboanță <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> NATURAL POLYMERS FOR NANOFIBERS – FIBRINOGEN	
5. Irina Tărăboanță , Iulia Balau-Mandru <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> THE MECHANIC DEGRADATION OF THE SURFACE OF THE FILAMENTS FIBERS	
6. Ana Vircan , Manuela Avădanei, Mitu Stan <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> MODEL ANALYSIS CONCERNING BODY PROPORTIONS ON CHILDREN	
7. Ana Vircan , Manuela Avădanei, Mitu Stan <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> ASPECTS ON CHILDREN GROWTH DYNAMICS	
8. Ramona Ciobanu , Dorin Ionesi, Costea Budulan <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> DOUBLE-LAYERED KNITTED GLOVE	
9. Dorin Ionesi , Ramona Ciobanu, Mirela Blaga, Costea Budulan <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> MULTIAXIAL WARP KNITTED PREFORMS FOR COMPOSITE MATERIALS	
10. Ecaterina Pintilie , Elena Filipescu <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> 3D SIMULATION FOR THE INDIVIDUALIZED GARMENT	
11. Ecaterina Pintilie , Constanta Comandar <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> THE 3D REPRESENTATION OF THE WEFT KNITTED FABRIC	
12. Emilia Filipescu , <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> SPECIFICS IN PATTERN DESIGN FOR WOMEN WITH ATYPICAL BODIES	
13. Viorica Crețu , Laura Macovei <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> SEAMLESS BY WARP KNITTING TECHNOLOGY	

<p>14. Mariana Ursache, Irina Ionescu, Carmen Loghin "Gheorghe Asachi" Technical University of Iasi, Romania INVESTIGATION ON SINGLE JERSEY GEOMETRICAL AND MECHANICAL PROPERTIES</p>
<p>15. Laura Macovei, Viorica Crețu, Alina Apreutesei "Gheorghe Asachi" Technical University of Iasi, Romania A COMPARATIVE STUDY OF THE WEFT KNITTED FABRICS WITH TUCK STITCHES</p>
<p>16. Elena Moisescu, Ecaterina Pintilie "Gheorghe Asachi" Technical University of Iasi, Romania STUDY ABOUT COMPACT STRUCTURE KNITWEAR UV RAYS PROTECTION FUNCTION</p>
<p>17. Liliana Lutic, "Gheorghe Asachi" Technical University of Iasi, Romania INNOVATIVE COLLECTIONS OF CLOTHING PRODUCTS USING UNCONVENTIONAL RAW MATERIALS</p>
<p>18. Yordan Kyosev¹, Wilfried Renkens² ¹Hochschule Niederrhein – University of Applied Sciences, Mönchengladbach, Germany, ²Renkens Consulting, Aachen, Germany MODELLING OF WARP KNITTED STRUCTURES - FROM PRODUCTION DATA TO 3D GEOMETRY</p>
<p>19. Cristian – Constantin Matenciu, Ionuț Dulgheriu, Stan Mitu "Gheorghe Asachi" Technical University of Iasi, Romania EXPERIMENTAL RESEARCH ON THE USE OF SYMPATEX FILM IN GARMENTS WITH RAINCOAT REPLACEMENTS</p>
<p>20. Ionuț Dulgheriu, Cristian - Constantin Matenciu, Stan Mitu "Gheorghe Asachi" Technical University of Iasi, Romania EXPERIMENTAL RESEARCH ON THE USE OF SYMPATEX FILM IN GARMENTS WITH RAINCOAT REPLACEMENT</p>
<p>21. Mihaela Carp, Stan Mitu "Gheorghe Asachi" Technical University of Iasi, Romania RELATIONSHIP BETWEEN PRODUCT DESIGN CLOTHES AND REPRESENTATIVE TYPES OF ORNAMENTS</p>
<p>22. Manuela Avădanei¹, Manuela Mihăiliasa² ¹"Gheorghe Asachi" Technical University of Iași, Romania, ²"Solvay Business School", Bruxelles, Belgium A NEW OPTION FOR THE OWN BRAND -3D GARMENT DESIGN</p>
<p>23 Marius Diaconu¹, Manuela Diaconu¹, Claudia Niculescu², Manuela Avadanei³ ¹Diaman Art, Iași, ²INCDTP, Bucharest, ³"Gh. Asachi" Technical University, Iași AUTOMATIC SOLUTION FOR DESIGNING GARMENT PATTERNS</p>
<p>24. Simi Stantieru, Pulferia Nicolaiov, Adela Florea "Gheorghe Asachi" Technical University of Iasi, Romania THE FUNCTIONAL PERFORMANCE ANALYSIS FOR A POLYVALENT TECHNOLOGICAL MANUFACTURING LINE</p>
<p>25. Gabriela Ioana Vintea, Stan Mitu "Gheorghe Asachi" Technical University of Iasi, Romania DESIGN ELEMENTS FOR MANUFACTURING LINES IN THE CLOTHING INDUSTRY</p>

<p>26. Alina Luca <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> ROLE AND INFLUENCE OF STATE OVER INNOVATION PROCESS AND IMPLEMENTATION OF INNOVATION IN SMALL AND MEDIUM ENTERPRISES</p>
<p>27. Alina Luca <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> MANAGEMENT ROLE OVER THE INNOVATION PROCESS AND IMPLEMENTATION OF INNOVATION IN SMALL AND MEDIUM ENTERPRISES</p>
<p>28. Madalina Zanoaga, Tanasa Fulga <i>Institute of Macromolecular Chemistry "Petru Poni", Iasi, Romania</i> MULTI-LAYER NONWOVEN TECHNICAL MATERIALS OBTAINED BY THERMAL BONDING</p>
<p>29. Madalina Zanoaga, Tanasa Fulga <i>Institute of Macromolecular Chemistry "Petru Poni", Iasi, Romania</i> EFFECT OF DIFFERENT ADDITIVES ON THE ADHESIVE PROPERTIES OF A COPOLYAMIDE 6/6.6</p>
<p>30. Rodica Harpa <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> YARNS QUALITY ASSURANCE DEPENDING ON THE SPINNING SYSTEMS I, II</p>

Saturday, November 20th, 2010

12:00-12:30	POSTER SESSION 2 Tex1 Building, Ground Floor
<p>1. Gianina Broasca, Daniela Farima, Mihai Ciocoiu <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> RESEARCH ON THE COMFORT FEATURES OF TEXTILE MATERIALS USED FOR POLICE UNIFORM</p>	
<p>2. Daniela Suteu, Carmen Zaharia, Gabriela Rusu <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> TREATMENT OF TEXTILE COLORED EFFLUENTS USING SORPTION ONTO INDUSTRIAL CELLOLIGNIN WASTES</p>	
<p>3. Vladlen Babcinetchi, Stan Mitu <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> MODERN METHODS OF COMPARATIVE ANALYSIS OF THE HUMAN BODY'S PROPORTIONS</p>	
<p>4. Vladlen Babcinetchi, Stan Mitu <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> BODY'S PROPORTIONS SYSTEMS AND APPLICATIONS IN ART AND CLOTHING</p>	
<p>5. Nicolae Constantinescu <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> DOCUMENTARY RESEARCH ON HOW TO FORECAST THE MATERIAL-INFORMATION DUALITY WITHIN LOGISTIC FLOWS</p>	
<p>6. Cristina Urzica, Beatrice Giugaru <i>"Gheorghe Asachi" Technical University of Iasi, Romania</i> RESEARCHES REGARDING THE ACHIEVEMENT OF AN AUTOMATIC CONCEPTUAL SYSTEM GUIDING THE KNITTED FABRICS PROPERTIES</p>	

<p>7. Atodiresei Gheorghe Virgil¹, Prodan Danut¹, Tulbure Ancuta Elena¹, Podaru Sebastian Andrei¹, Atodiresei Jana² ¹The Academic Federation of Scientists, Iasi, Romania, ² Technical University of Moldavia, Chisinau RESEARCHES ON THE CHEMICAL TECHNOLOGY OF DYEING OVINE FURS WITH ACID COLORANTS</p>
<p>8. Ion Verzea "Gheorghe Asachi" Technical University of Iasi MAINTAINABILITY BREAKEVEN POINT</p>
<p>9. Sava Teodor Ciprian, Roman Marina "Gheorghe Asachi" Technical University of Iasi, Romania a) LOCAL SIMPLE DEVIATIONS OF THE FIRST KIND EXISTING IN THE KNITTED FORCE-EXTENSION DIAGRAM; b) LOCAL SIMPLE DEVIATIONS OF THE SECOND KIND EXISTING IN THE KNITTED FORCE-EXTENSION DIAGRAM</p>
<p>10. Marina Roman, Ciprian Sava, Costea Budulan "Gheorghe Asachi" Technical University of Iasi, Romania DEFORMATION MECHANISMS IN KNITTED FABRICS. a) MAJOR DEVIATIONS FROM THE SIMPLIFIED GENERAL MODEL b) MINOR DEVIATIONS FROM THE SIMPLIFIED GENERAL MODEL</p>
<p>11. Carmen Mihaela Popa, Crețu Vasile "Gheorghe Asachi" Technical University of Iasi, Romania CONTRIBUTIONS ON EXTENDING POSSIBILITY ASSAY THE FABRIC ON UPON REQUEST OF BENDING</p>
<p>12. Carmen Mihaela Popa, Crețu Vasile "Gheorghe Asachi" Technical University of Iasi, Romania CONTRIBUTIONS ON EXTENDING POSSIBILITY ASSAY THE DETACHMENT FORCE FOR THE FABRIC CONSOLIDATED USING THE THERMO – ADHESIVE PROCESS</p>
<p>13. Victoria Mečnika¹, Edgars Kviesis², Zbignevs Marcinkevičs², Renārs Erts², Ivars Krieviņš¹, ¹Riga Technical University, ²University of Latvia, USABILITY OF A PHOTOPLETHYSMOGRAPHY DEVICE FOR A BIOMEDICAL GARMENT</p>
<p>14. Rachid Chaib Mentouri University of Constantine, Algeria FOR SUSTAINABLE DEVELOPMENT AS REGARDS PREVENTION, SAFETY AND HEALTH AT WORK IN A COMPANY</p>
<p>15. Josef Skrivanek, Martin Bilek Technical University of Liberec, Czech Republic ANALYSIS OF MATHEMATICAL MODEL OF THE FRAME OF SMALL-DIAMETER KNITTING MACHINE</p>
<p>16. Kumar Anil, Jaroslav Beran Technical University of Liberec, Czech Republic TRAVERSING MECHANISM FOR WINDING OF YARN WITH TRAVERSING CABLE DRIVEN BY TWO MOTORS</p>
<p>17. Karel PEJCHAR, Jaroslav Beran, Petr Krpeš Technical University of Liberec, Czech Republic DETERMINATION OF PENETRATION FORCE DURING SEWING PROCESS OF LEATHER</p>

<p>18. Yordanka Angelova, Alenka Pavko-Cuden², Ales Hladnik² ¹<i>Technical University of Gabrovo, Bulgaria</i>, ²<i>University of Ljubljana, Slovenia</i> Anova analysis of the structural, material and processing parameters on the knitted loop length</p>
<p>19. Mariana Ursache, Carmen Loghin, Rodica Mureşan, Angela Cerempei, Augustin Mureşan <i>“Gheorghe Asachi” Technical University of Iaşi, Romania</i> FUNCTIONAL FINISHES OF COTTON KNITTED FABRICS</p>
<p>20. Dabija Ala <i>Light Industry Faculty, Technical University of Moldova, Chisinau, Republic of Moldova</i> THE ASPECTS OF EGRONOMICAL CRITERIA USED IN DESIGNING OPTIMAL PROTECTION CLOTHING</p>
<p>21. Dabija Ala <i>Light Industry Faculty, Technical University of Moldova, Chisinau, Republic of Moldova</i> THE ISSUES OF STANDARDIZATION AND EVALUATION OF CONFORMITY TO THE PERSONAL PROTECTIVE EQUIPMENT</p>
<p>22. Elena Moisescu, Liliana Lutic <i>“Gheorghe Asachi” Technical University of Iaşi, Romania</i> KNITTED EXTENSIBILITY IMPORTANT FACTOR IN EVALUATING THE ERGONOMIC FUNCTION OF MANUFACTURED PRODUCTS</p>

CONTENT

- 1. HIGH PERFORMANCE FIBRES AND YARNS**
- 2. NEW TEXTILE MATERIALS, FUNCTIONAL TEXTILES, TECHNICAL TEXTILES**
- 3. DESIGN AND PRODUCT DEVELOPMENT**
- 4. IT Applications;
CAD/CAM systems for knitting and clothing**
- 5. DEVELOPMENTS OF TECHNOLOGIES AND EQUIPMENTS**
- 6. MANAGEMENT AND MARKETING;
QUALITY ASSURANCE**

1. HIGH PERFORMANCE FIBRES AND YARNS

1.1. INVESTIGATIONS IN TENSILE PROPERTIES OF WOOL IN DIFFERENT CLIMATIC CONDITIONS OF TESTING

VASILE BLAȘCU

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address:blascu@tex.tuiasi.ro

Abstract. Wool fibre has outstanding natural properties as: soft handle, water absorption, superior drape. The tensile properties of single wool fibres were investigated with tensile testing method and equipment under the effects of temperatures and water. Differential Scanning Calorimetry (DSC) method was applied to determine denaturation and degradation of wool fibre. With increasing temperature, tensile properties of the wool fibres decreased considerably. A great decrease on tensile properties was seen at temperatures higher than ~200 °C after which a denaturation of α -keratin and a wide thermal degradation peak were observed in DSC diagrams. The wet fibres obtained lower tensile characteristics except breaking extension which increased by 6 % and 14 % for the fibres kept in water for one day and one week, respectively. The breaking extension of the fibre tested in water increased with 60 % which indicates the important role of water molecules on the intermolecular interactions during stretching.

The weakening effect of water molecules on the structure was also shown by DSC of wet wool fibres. The thermal degradation enthalpy of α -keratin and other histological components decreased by 15 %.

Key words: Wool fibre, α -keratin, Tensile property, Stress-strain curve, Intermolecular interactions

1.2. STRUCTURE-PROPERTIES CORRELATIONS OF SOME POLY(ETHYLENE THEREPHTALATE) FIBRES

VASILE BLAȘCU

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address:blascu@tex.tuiasi.ro

Abstract. Two poly(ethylene therephtalate) – PET, wool-type, fibres were studied. The fatigue of mentioned fibres was accomplished by means of loading-unloading cyclical stresses (at Instron dynamometer) with constant forces for the elastic range (two forces of 60 and of 100 mN/fibre), for the post-elastic range (two forces of 250 and 300 mN/fibre), for the end zone of the stress-strain curve. The structural morphology and crystalline orientation of the fibres were investigated by means of x-ray scattering, density measurements and infrared (IR) spectroscopy. The degree of crystallinity, crystallite orientation and apparent crystallite dimensions were determined by x-ray scattering. Birefringence measurements were used to study the average molecular orientation and the orientation of macromolecular chain segments in the amorphous regions. Significant differences between the two PET wool fibre types were observed.

Key words: PET fibre, Structure-property, Fibre fatigue, Low-pilling type, Crystalline structure

1.3. NATURAL POLYMERS FOR NANOFIBERS – FIBRINOGEN

IULIA BĂLĂU-MÎNDRU, TUDOREL BĂLĂU-MÎNDRU, IRINA TĂRĂBOANȚĂ

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address ibalau@tex.tuiasi.ro

Abstract. Natural polymers are candidate materials to be developed as electrospun nanofibrous scaffolds. They have many potential advantages over other commonly used scaffolds because of their enhanced biocompatibility and biofunctionality. Scaffolds electrospun from natural polymers are thought to possess desirable qualities in terms of biocompatibility and biodegradability. Fibrinogen has proven to be an intriguing polymer for use as a tissue engineering scaffold as it has consistently demonstrated excellent bioactivity. Electrospun fibrinogen scaffolds need to be cross-linked in order to increase their lifespan both *in vivo* and *in vitro*. An ideal crosslinking agent would slow the rate of fibrinogen degradation, while having no negative impact on the bioactivity of the scaffold itself.

Key words: fibrinogen, scaffolds, electrospinning, crosslinking, tissue engineering.

1.4. SPIDER SILK – PROPERTIES AND APPLICATIONS

IULIA BĂLĂU-MÎNDRU, TUDOREL BĂLĂU-MÎNDRU, IRINA TĂRĂBOANȚĂ

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address ibalau@tex.tuiasi.ro

Abstract. The silks produced by silkworms and spiders are the most comprehensively investigated silks, the former due to its availability, use in textiles and historical medical use as a suture material, and the latter because of its remarkable mechanical properties. Spider silk is one of the strongest known natural materials with a high tensile strength and toughness.

These attractive features have led to many possible applications in biomaterials area such as artificial ligaments or tendons, surgical sutures or biodegradable membranes. Because of the potential of high strength and superb toughness it is likely that dragline-like techno-silks will sooner or later find applications in impact-textiles or other structural fabrics where strong, flexible materials are desirable.

Key words: silk, spidroin, mechanical properties, biomaterials, potential applications

1.5. THE MECHANIC DEGRADATION OF THE SURFACE OF THE FILAMENTS FIBERS

IRINA TARABOANTA, IULIA BĂLĂU-MÎNDRU

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address itarab@tex.tuiasi.ro

Abstract. This article notices the effects of processes of weariness and breaking on fibres and threads poly(alcohol vynilic). The experiments that were made show the analysis of the effects of some mechanical resistance by means of electronic microscopy of scanning.

Key words: fibres, polyalcoholvynil, mechanical resistances, electronic microscopy.

1.6. RESEARCH CONCERNING THE NEW YARNS FOR MEDICAL FULL KNITTED USED IN PRESSURE THERAPY

TIRON CRINA , LAVINIA RUSU, MARINA ROMAN, COSTEA BUDULAN

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: citron@tex.tuiasi.ro

Abstract. The main issue of research are the new yarns proposed for medical full knitting fabrics. Properties of knitted fabrics are influenced by many factors : the nature of raw materials, knitted fabrics density, parameters of the knitting operation, destination of the fabrics. The resistance of yarns used is very important characteristic for medical textiles used for pressure therapy. Product quality is strictly related to the possibility of using it without to modify his original characteristics. This paper presents the results of testing to resistance and elongation of the yarn used for knitting and friction until deterioration for the knitted fabrics used in pressure therapy.

Key words: raw materials, knit, pressure therapy

1.7. BAMBOO - A NEW TEXTILE RAW MATERIAL

**MIRELA (IORGOAEA) GUIGNARD¹, ABHIJIT MAJUMDAR²,
LUMINITA CIOBANU³, DANIELA FARIMA⁴, MIHAI CIOCOIU⁵**

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management^{1,3,4,5}

Department of Textile Technology, Indian Institute of Technology²

Email address siorgoaea@tex.tuiasi.ro

Abstract The need of using the natural fibers is determined one side by the demand for renewable and biodegradable fiber, and the other side by lowest natural fibres production that is insufficient for all market requirements. The bamboo it is a new raw material that is increasingly used in the textile industry, due to specific characteristics performances in comparison with the other fibres. This paper presents the characteristics of bamboo fiber, yarns, knits and also the products made by bamboo.

Key words: bamboo plant, bamboo fiber bamboo yarn, bamboo product

2. NEW TEXTILE MATERIALS, FUNCTIONAL TEXTILES, TECHNICAL TEXTILES

2.1. THE FABRIC HAND OF ANTIMICROBIAL PROTECTED COTTON FABRICS USING ANTIBIOTICS AND ANTISEPTICS

ANA MARIJA GRANCARIC, ANITA TARBUK, DARKO UJEVIC

University of Zagreb, Faculty of Textile Technology

Email address: amgranca@ttf.hr

Abstract. Healthy and active lifestyle has led in recent years to the rapid development of antimicrobial treatment. Such antimicrobial materials provide lasting freshness and a sense of security and well-being of consumers. At first glance it seems easy to achieve antimicrobial properties, but the persistence of such treatment a bigger problem. Application of natural zeolite nanoparticles for antimicrobial protection has shown increased activity and synergism with some antimicrobial agents, e.g. azalide. On the other hand, azalides are not acceptable from dermatological or ethics view, because of resistance development. This paper deals with the selection of optimal antimicrobial treatment which will provide protection against *Gram* positive (*Staphylococcus aureus*) and *Gram* negative (*Klebsiella pneumoniae*) bacteria, as well as fungi (*Candida albicans*). For this purpose, 100 % raw and bleached cotton knitted fabric was treated by exhaustion with natural zeolite nanoparticles and different antimicrobial agents – cationic surfactant, azalide and antiseptic. It is well known that the cationic surfactants significantly improve fabric hand, but the high concentrations of activated zeolite getting it worse. Therefore, the influence of these treatments on fabric hand (subjective and objective evaluated) was investigated.

Key words: antimicrobial protection, cotton knitted fabric, fabric hand, friction coefficient

2.2. CHARACTERIZATION OF SOME FIBROUS SUBSTRATES SURFACES COATED WITH Ag-DEPOSITED TiO₂ NANOPARTICLES, WITH POTENTIAL APPLICATION IN MULTIFUNCTIONAL FINISHES

EVELINE POPOVICI¹, NARCISA VRINCEANU¹, IULIA ALEXA¹,
CLAUDIA MIHAELA HRISTODOR¹, DIANA COMAN²

¹ "AL. I. Cuza" University from Iasi, Romania, Department of Materials Chemistry

² "Lucian Blaga" University from Sibiu,

Email address: narcisa.vrinceanu@ulbsibiu.ro

Abstract. Nanotechnology offers the possibility of rendering textiles certain properties which protect humans and their natural environment. In the same time, the nanostructures are capable of enhancing the physical properties of conventional textiles, in areas such as anti-microbial properties, water repellence, soil-resistance, anti-static, anti-infrared and flame-retardant properties, dyeability, colour fastness and strength of textile materials. The aim of this research was the development of nano-structural fibrous composites with barrier properties. Firstly, the study was focused on the synthesis of Ag-deposited TiO₂ particles formed by a chemical reduction method, using silver nitrate (Aldrich) with SDS (sodium dodecyl sulfate (CH₃(CH₂)₁₁OSO₃Na (99%), Aldrich) hydrazine hydrate (Aldrich) aqueous solution, used as a reducing agent and a dispersant,

respectively. In the second stage of the research, the morphology and micro-structure of Ag-deposited TiO₂ particles have been determined. The characterization of the functionalized surfaces has been performed using a co-assisted system: surface area measurements (adsorption/desorption isotherms, surface area measurement and pore size distribution) and FTIR-ATR spectroscopy. Subsequently, the research aimed towards the development of compositions of optimal dispersion containing Ag deposited TiO₂ nanoparticles and the methodology of nano-particles incorporation into selected fibrous substrates. The fibrous substrates surface functionalization (nanocoating technique) is described in a detailed way.

Key words: nanotechnology, fibrous substrates, Ag-deposited TiO₂, nanoparticles, functionalization, finishing

2.3. MEDICAL TEXTILE Materials FOR IMPLANTATION INTO HUMAN body

DODU ARISTIDE¹, DORIN DAN²

¹Scientific researcher, Prof. Asoc. Eng.

¹Academy of Technical Sciences of Romania

“Gheorghe Asachi” Technical University of Iasi,

Faculty of Textile, Leather and Industrial Management²

Email address: aristide_dodu@yahoo.com

Abstract. It is a well known fact that in today's surgery textile products are successfully used for replacing some organs or portions of human organs. Thus, the polyester synthetic fibers transformed in special textile products can represent implantable prosthetic devices for implantation into human body. Out of the initiative, collaboration and support of Prof. PhD MD Ioan De Popa, former chief of the cardiovascular surgery clinic of Fundeni Clinical Hospital, a team of specialists from this hospital, from the Institute of Textile Researches and other clinics, ICECHIM, CCFS, Faculty of Textiles-Leather Engineering from UT Iași and ICPCM, within a program financed by the Academy of Medical Sciences, approached very important research works in view of achieving in the country a large range of medical textile devices that can be implanted into human body.

Key words: medical textile materials for implantation into human body

2.4. EFFECT OF DIFFERENT ADDITIVES ON THE ADHESIVE PROPERTIES OF A COPOLYAMIDE 6/6.6

MADALINA ZANOAGA, TANASA FULGA

“Petru Poni” Institute of Macromolecular Chemistry, Iasi, Romania

Email address: zanoaga@icmpp.ro

Abstract: The effect of different additives on the adhesive properties of a copolyamide 6/6.6 was investigated and results are presented in this study. Hexamethylenediammonium adipate (HA salt), polyethylene (PE) and castor oil (CO) were considered as modifying additives for the considered ternary copolyamide. To determine the adhesive properties of these additivated copolymers, samples of two layers of fabric bonded together with thermoadhesive powder obtained from these polymers were produced and tested for peeling strength and resistance to dry cleaning and laundering. The mechanical tests showed that the copolyamidic polymer containing CO was the only one which did not show good adhesion properties towards textile materials. The copolyamide containing HA salt had a

high adhesion to the textile materials and proved to be resistant to dry cleaning, while the decrease in peeling strength of the bonding did not exceed 10%. The copolyamide with PE exhibited the highest adhesion to textile materials.

Key words: additive effect, low melting point adhesives, adhesive properties, thermoadhesive powder, mechanical tests

2.5. THE PERFORMANCES OF A BIOMATERIAL WITH ANTI-ALLERGICAL PROPRIETIES

**MIHAELA HRITCU¹, CEZAR-DORU RADU¹, AURELIA GRIGORIU¹,
LOTI-CORNELIA OPROIU²**

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management¹
Email address: miha.hritcu@yahoo.com*

Abstract. The paper carries out a fabric anti-allergical functionalized using active principles able to improve the state of discomfort due to an allergic episode. The aim is obtaining textiles worn as underwear, able to release substances with anti-allergic activity in the dermis. Experimental data are still running and they showing the level of the researches accomplished up to now. As support is used a knitting interlock fabric cotton 100% with Nm = 60/1, knitted “Knitting” on a knitting circular machine. Bioactive material is prepared using inclusion compounds with support for a physical adsorption MCT-β-CD (monochlorotriazinyl-beta-cyclodextrin). Inside of inclusion compound of CD are tested some anti-allergic reagents, whose biological activity and bio compatibility have been tested *in vivo*.

Key words: menthol, MCT-β-CD, biomaterial performances, hypersensitivity

2.6. RESEARCH REGARDING TEXTILE ARTICLES WITH THERMO-REGULATING PROPERTIES

Marius BUTUC¹, Costea BUDULAN¹, Gabriela BOHM³

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management¹
University of Oradea, Faculty of Textiles and Leather³
Email address: marius.butuc@yahoo.com*

Abstract Phase change materials are tiny paraffin-filled microcapsules that store and release energy according to the temperature of the environment. During the period of activity these materials store or release the excess heat generated by the body. Thermo-regulating materials like knitted fabrics can be obtained by using yarns with PCM's or by finishing a normal knitted fabric with PCM. A short description of the processes that can be made to obtain thermo-regulating knitted fabrics will be presented on this paper.

Key words: phase change materials, heat, thermo – regulating fabrics, microcapsules

2.7. THERMAL COMFORT OF BED SHEETS AFTER SWEATING

LUBOS HES

Technical University of Liberec, Czech Republic
Email address: lubos.hes@gmail.com

Abstract. Thermal comfort properties of various fabrics in dry state were systematically studied by many authors, but papers on thermal comfort properties of fabrics, namely bedsheets, are missing in the professional literature. In this paper, thermal conductivity, thermal resistance, water vapour permeability and thermal absorbtivity in dry and wet state of 10 samples of commercial cotton, cotton/PU and cotton/PES beedsheets are presented. The samples were wetted by maeans of the so called “ sweating impulse”. It was found, that the warmer (drier) contact feeling and highest thermal insulation in wet state exhibited knitted bedsheets containing some percentage of PU or PES, and also 100% cotton woven fabrics with hairy surface.

2.8. STUDY ABOUT COMPACT STRUCTURE KNITWEAR UV RAYS PROTECTION FUNCTION

ELENA MOISESCU, ECATERINA PINTILIE

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: moiescu@tex.tuiasi.ro,

Abstract. Due to climate changes, clothing protection function becomes more and more important. UV radiations can have harmful effects for humans, without proper clothing or cosmetical protection. One of the important characteristics of the knitwear for its protection function is the area cover factor δ_s representing the thread projecting surface on the stitch plane, reported to the total loop area. This paper proposes two methods for theoretical assessment of the protection efficiency against UV radiations for single jersey structure. The first method is based on true values of the structure parameters A, B and F and on calculus relations for covering and filling factors, according with scientific papers. According with these relations we can calculate UV radiations protection efficiency factor. The second method is depends on a A, B and F parameters real scale 3D model.

Key words: UV radiation, UV radiation protection efficiency, area covering factor, 3D knitted fabric representation

2.9. RESEARCHES REGARDING THE THERMAL INSULATION CAPACITY OF THE KNITTED FABRICS

**CRISTINA URZICA¹, SEBASTIAN ANDREI P ODARU², BEATRICE GIUGARU²,
DANUT PRODAN²**

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management¹,
²The Academic Federation of Scientists, Iasi Romania
Email address: cristurzica@gmail.com

Abstract. In order to evaluate the human heat balance in a high-temperature environment, an experimental model was proposed and achieved to analyze the main indicators that allow the direct evaluation of the thermal conductivity. This model consisted of the evaluation and correlation of the environmental temperature values as well as the

skin temperature values. A key factor in analyzing the heat transfer is the distance from the heat source calculated as: $D=S3 - S1$ where S3 stands for the coordinates of the point in which the external sensor is placed.

Key words: thermal isolation capacity; temperature sensor

2.10. METHODS OF EVALUATION OF THE PRESSURE EXERTED BY THE MEDICAL STOCKINGS

ANCUA ELENA TULBURE¹, CEZAR DORU RADU², SEBASTIAN ANDREI PODARU¹, GHEORGHE VIRGIL ATODIRESEI¹

¹*The Academic Federation of Scientists,*

²*“Gheorghe Asachi” Technical University of Iasi, Romania*

Faculty of Textile, Leather and Industrial Management

Email address: ancuta_tulbure@yahoo.com

Abstract. Medicinal stockings are used to treat venous insufficiency of lower limbs, with a role in increasing venous flow by putting graduated with highest value in the ankle. The degree of compression decreases towards the upper leg and is expressed in mmHg.. Are presented two methods of measuring the pressure of medical stockings: obtain values of pressure using specific devices and pressure values obtained by applying mathematical models.

Key words: medical stocking, pressure, methods of evaluation

2.11. CHARACTERISTICS REQUIRED FOR GEOGRIDS USED IN THE ROAD WORKS

ANA-MARIA CIUBOTARIU, CRINA TIRON, LAVINIA RUSU, COSTEA BUDULAN

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: ciubotariu.anamaria@gmail.com

Abstract. Embedded in earth or other material, geogrids act by network friction / rolling on both sides, and by mechanical interaction with the material. The article covers issues relating to the use of geogrids in road works and asphalt layer structure, manufacturing technologies, and test features specific to this type of material. Incorporation of geogrids in pavement improves the behavior during the exploitation by increasing resistance to the transmitted cracks and to the surface creeps.

Key words: geogrid, reinforcement, benefits, properties

2.12. MULTI-LAYER NONWOVEN TECHNICAL MATERIALS OBTAINED BY THERMAL BONDING

MADALINA ZANOAGA, FULGA TANASA

Institute of Macromolecular Chemistry “Petru Poni”, Iasi, Romania

Email address:zanoaga@icmpp.ro

Abstract The paper presents the way to accomplish multi-layer nonwoven technical materials by thermal bonding method using as adhesive a low temperature melting

polymer having a copolyamidic structure. For this research, recycled textile fibers were used in order to offer a new alternative route to recover and up-cycle textile waste. The novel technical materials were different by their mass per unit area, thickness, fibrous blend components and by the percentage of the deposited adhesive powder. The influence of these parameters on the composite properties was studied. Taking into consideration the low melting temperature (around 130°C) of the used copolyamidic adhesive and its good adhesion properties, we can state that it can be a valuable alternative in terms of producing new technical materials using recycled textile fibers.

Key words: multi-layer nonwoven materials, recycled textile fibers, copolyamidic adhesive, technical textiles.

2.13. MULTIAXIAL WARP KNITTED PREFORMS FOR COMPOSITE MATERIALS

DORIN IONESI, RAMONA CIOBANU, MIRELA BLAGA, COSTEA BUDULAN

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: dionesi@tex.tuiasi.ro

Abstract: over the past few years, multiaxial warp knit fabrics have made significant steps into the industrial composites area. Composite preforms that are based on multiaxial warp knits are designed to ensure reliability and performance of the ensemble. The multiaxial knitted structures are compound by layers that can be assembled in warp, weft, and bias direction, and they are kept together by knitted yarns to provide structural integrity. This paper will present the use of multiaxial warp knit fabrics in industrial composite applications. The paper will also discuss the physical properties, advantages and disadvantages of multiaxial warp knit fabrics according to the particular field of use.

Key words: knitted preforms, multiaxial warp knits, composite materials, technical applications

2.14. PRESENT AND FUTURE IN TEXTILE INDUSTRY – SMART PRODUCTS

LILIANA LUTIC

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: llutic@tex.tuiasi.ro

Abstract. A new concept has been gaining terrain in the textile literature, defining and describing “smart clothes”, without which future would be impossible. These products have a dynamic behaviour, the capacity to adapt to the ambient conditions or exterior stimuli, monitoring and improving the user’s life. The paper presents and illustrates through examples, the major groups of smart products.

Key words: clothing, future, nanotechnology, adaptability

2.15. FUNCTIONAL FINISHES OF COTTON KNITTED FABRICS

**MARIANA URSACHE, CARMEN LOGHIN, RODICA MUREȘAN,
ANGELA CEREMPEI, AUGUSTIN MUREȘAN**

*“Gheorghe Asachi” Technical University of Iași, Romania
Faculty of Textiles, Leather and Industrial Management*

Abstract. The paper presents the results of the finishing process of cotton knitted fabrics concerning the resistance of dyeing and the antimicrobial activity. The fabrics were pre-treated with chitosan in order to improve both dyeing capacity and antimicrobial activity against different groups of micro-organisms like bacteria and fungi grown on textiles. In order to provide cotton fabrics with antibacterial properties and to improve dyeing resistance, samples of the dyed materials were treated with a solution of silver nitrate. The investigations were carried out with cotton knitted fabrics produced on a small diameter circular knitting machine. The chemical changes which appear at the surface of cotton fibre as a result of chitosan and silver nitrate treatments were recorded, using FTIR-ATR spectroscopy.

Key words: single jersey, antimicrobial finishes, chitosan, silver nitrate, FTIR-ATR spectroscopy

2.16. MULTIFUNCTIONAL TEXTILE COMPOSITE BASED ON POLY(THIOPHENE)S CONTAINING THERMOTROPIC MOIETIES. SYNTHESIS AND CHARACTERIZATION

ANCA DANA BENDREA¹, LUMINITA CIANGA¹, IOAN CIANGA¹, CARMEN MARIA LOGHIN², SUNA TIMUR³ DILEK ODACI DEMIRKOL³, SERHAN SAKARYA⁴, YUSUF YAGCI⁵

¹ *“Petru Poni” Institute of Macromolecular Chemistry, Iasi, Romania*

² *“Gheorghe Asachi” Technical University,*

Faculty of Textiles and Leather Engineering, Iasi, Romania

³ *EGE University, Department of Biochemistry, 35100, Izmir, Turkey*

⁴ *Adnan Menderes University School of Medicine, Department of Infectious Diseases and Clinical Microbiology, 09100 Aydin, Turkey*

⁵ *Istanbul Technical University, Department of Chemistry, Maslak, Istanbul 34469, Turkey*

Abstract. A multifunctional textile composite was obtained by using a 3D knitted cotton fabric in conjunction with a thiophene monomer containing a thermotropic moiety in the side chain. The structure of the monomer was designed that by oxidative polymerization a stimuli-sensitive polymer (temperature, electrical field, solvent, interfaces) to be obtained. The structure of the synthesized composite material and polymer formed in the bulk reaction were characterized by infrared spectroscopy and X-ray diffraction. The polymer film morphology and the composite surface topography were examined by microscopic methods SEM and AFM and the surface wettability was evaluated by static contact angle (Cas) measurement. The thermal behaviour was assessed comparatively for all the synthesized materials and their anti-adhesive and anti-microbial properties were also investigated.

Key words: conductive textiles; composite; conducting polymers; cotton; antibacterial activity

3. DESIGN AND PRODUCT DEVELOPMENT

3.1. RELATIONSHIP BETWEEN PRODUCT DESIGN CLOTHES AND REPRESENTATIVE TYPES OF ORNAMENTS

MIHAELA CARP, STAN MITU

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: mcarp@tex.tuiasi.ro/

Abstract. Ennoblement clothing products can be appreciated not only by the conception of product but also by how its design is closely related to the material texture, color and decorations by painting, weaving or sewing. They meet the many enrichment opportunities for women clothes, ornaments representative with specific methods and through diversification traditional art or appropriate industrial technologies. In this way, fashion items can be personalized, or not influenced by fashion trends. The paper proposes a brief overview of some types of ornaments and how to apply them in the creation of fashion.

Key words: fashion design, ornaments, clothing ennoblement

3.2. BODY'S PROPORTIONS SYSTEMS AND APPLICATIONS IN ART AND CLOTHING

BABCINETCHI VLADLEN, MITU STAN

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: vbabcinetchi@tex.tuiasi.ro

Abstract: the proportions' study represents the study of the connections between the different elements of a whole in relation with it. The studying method is accomplished by setting the rules between these connections, which will make them accessible in order to conceive an artistic creation. The various interpretations of objective situations that are used in an artistic creation, are subjected to different points of view and therefore, originating different aesthetic experiences. This aspect is applied equally to all the domains of plastic arts. As a study of proportions, it is usually used the study of the human body proportions. This concept is generated by the fact that very often the human body is considered as a standard; the proportions of the human body's features is being used as reference point in paintings, sculpture as well as in architecture.

Key words: canon, reference point, stylization, sculpture

3.3. INNOVATIVE COLLECTIONS OF CLOTHING PRODUCTS USING UNCONVENTIONAL RAW MATERIALS

LILIANA LUTIC

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: llutic@tex.tuiasi.ro

Abstract. This paper presents collections of products made out of unconventional raw materials, which successfully enlist in a modern, cutting-edge, innovative style, targeting the young, stylish market eager to shock with extravagant apparitions.

Key words: unconventional, materials, clothing, products

3.4. ASPECTS OF WOMEN OFFICE CLOTHES DESIGNING

IRINA TUTUNARU, STELA BALAN, MARCELA IROVAN, ELENA MELNIC

Technical University of Moldova, Faculty of Light Industry, Chisinau, Republic of Moldova

Email address: itutunaru@gmail.com

Abstract. Present paper pursues the aim of assortment diversification and capturing of a certain part of market by producing new outlines of office suits for young people by developing the production assortment of the ensemble type, consisting of jacket and skirt, destined for day-to-day wear. The main peculiarity of the designed outlines that is manifested through the character of adopted constructive solutions represents the orientation upon the selected part of the market: women who compose a group of young age (18 – 29 years), with medium and high earnings, represent a moderate prestigious and mould-breaking attitude towards the clothes. The paper suggests a declension from classic canons of business wear outlines and at the same time retention of elegance and strictness that are common to the suits of this destination. Diversification of the outlines was provided by introduction of laconic and original lines and forms into suit's accessories.

Key words: office suits, assortment development

3.5. DEVELOPMENT OF THE SPECIAL FISHERMEN'S WEAR ASSORTMENT

STELA BALAN, IRINA TUTUNARU, MARCELA IROVAN, MARIA BURLEA

Technical University of Moldova, Faculty of Light Industry, Chisinau, Republic of Moldova

Email address: stela.balan@yahoo.com

Abstract. The paper puts forward theoretical and experimental results of the development of fishermen's protective equipment assortment. At the initial stage of layout were established environmental requirements, requirements for ergonomic correspondence, production designing criteria. There are presented layout stages and constructive-technological peculiarities specific for the assortment. Production samples of the designed equipment: ensemble including jacket and jump suit, destined for cold seasons, were successfully approved during the experimental process of wear and can be recommended for industrial production in small batches.

Key words: fishermen's wear, assortment development.

3.6. CONTRIBUTIONS TO THE ELABORATION OF PROTECTIVE CLOTHING FOR HUNTERS

**MARCELA IROVAN, IRINA TUTUNARU, STELA BALAN,
NATALIA BUNICA**

*Technical University of Moldova, Faculty of Light Industry, Chisinau, Republic of Moldova
Email address: marcela.irovan@gmail.com*

Abstract. This work considers the problem of designing assortments of special clothing and presents the results of theoretical and experimental studies of protective garments for hunters. The work includes historical data relating to the appearance and evolution of hunters' clothing, an analysis of assortment of available clothing, determination of functions and requirements to the protective garments for hunters, as well as the characteristics of materials used for the manufacturing of the designed products. The experimental part of the work includes the characteristics of compositional, constructive and technological structure of hunter's suit, as well as the results of experimental design.

Key words: clothing for hunters, elaboration of assortments.

3.7. A NEW OPTION FOR THE OWN BRAND -3D GARMENT DESIGN

MANUELA AVĂDANEI¹, MANUELA MIHĂILIASA²

"Gheorghe Asachi" Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management¹

"Solvay Business School", Bruxelles, Belgium²

Email address: mavad@tex.tuiasi.ro

Abstract. This paper represents a scientific approach concerning a company, which produce garments using a lohn manufacturing system. The development is realized through innovation and creation of new products with modern designs solution (3D design) to create and launch its own brand. The strategic decision process is analyzing by following aspects: technological and economical.

Key words: lohn, 3D garment design, innovation, strategy

3.8. MODERN METHODS OF COMPARATIVE ANALYSIS OF THE HUMAN BODY'S PROPORTIONS

VLADLEN BABCINETCHI, STAN MITU

"Gheorghe Asachi" Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: vbabcinetchi@tex.tuiasi.ro

Abstract: Beginning with the development of the human society can be observed a high interest of human beings regarding what they represent in relationship with the nature and the entire universe. This need of knowledge has taken life today in a series of sciences that have evolved and expanded, having the same concern, or object of study: the

human being. The present writing represents a synthesis of the evolutions of the human body representations, containing proportion studying methods, useful in various domains of the science and plastic arts. The author's contributions view especially the applications of the gold section upon the human body and its' different divisions.

Key words: synthesis, man, muscles, division, methods, analysis

3.9. SPECIFICS IN PATTERN DESIGN FOR WOMEN WITH ATYPICAL BODIES

EMILIA FILIPESCU

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: emfi@tex.tuiasi.ro*

Abstract. The objective of the present research consist of the analyze and the organize of the information of morphological indicators that characterize adult female body shape that don't frame in standard body type. The research also includes the capitalization of these indicators with the purpose of elaboration of base pattern for women garment that have the main support on shoulder. Nowadays it can be seen at women from different range of age, social – professional activity an increase in desire to buy garment witch is made by individual system. A preliminary study distinguished the fact that 38% of women use frequently garment that are made by individual system. This fact has as a reason the difficulty of many women to buy the perfect fit garment, made in industrial system, from stores.

Key words: morphological indicators, atypically body shape, base pattern, women dress.

3.10. MODEL ANALYSIS CONCERNING BODY PROPORTIONS ON CHILDREN

ANA VIRCAN, MANUELA AVĂDANEI, MITU STAN

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: avircan@tex.tuiasi.ro*

Abstract: Anthropometry researchers demonstrated that the proportion report concerning the head height and the body height varies upon age intervals. It is high lightened the fact that regular laws are applied starting with adolescence, thing also supported by the way in witch the golden section is applied upon age intervals. Theoretical and fundamental researches show this fact, and the conclusions drawn will represent the base for antropomorphological study on children, applied upon the specific age group.

Key words: proportions, antropomorphological indicators, interdependence, proportions rules.

3.11. ASPECTS ON CHILDREN GROWTH DYNAMICS

ANA VIRCAN, MANUELA AVĂDANEI, MITU STAN
“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: avircan@tex.tuiasi.ro

Abstract: The paper is based on a bibliographical study about children and teenagers growth dynamics showing the correlation between body mass and age, waist and age, skull perimeter and age. The researchers from the anthropometry field state the necessity for defining some growth indicators, establishing some limits for identifying anomalies. Based on researches on the existing studies other researches will take place on the age group, intended to establish an anthropometric data base for constructive design.

Key words: growth dynamics, age group, antropomorphological indicators, interdependence.

3.12. DOUBLE-LAYERED KNITTED GLOVE

RAMONA CIOBANU, DORIN IONESI, COSTEA BUDULAN
“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: aciobanu@tex.tuiasi.ro

Abstract. Protective gloves are designed to protect the wearer hands from hazards like cuts, punctures from knives or other sharp instruments, excessive heat or flame, excessive cold or wind, chemicals, abrasions, vibrations. Among those types of protection the gloves must ensure the wearer a favourable microclimate inside. Cut resistance gloves are usually made from materials using fibres like glass, aramid, high density polyethylene, high density polymers or metals. These yarns are stiff and abrasive to the skin, features that are affecting the fit on the hand, dexterity, tactile sensibility and also can produce skin irritation. In order to increase the wearer comfort it can be combine these materials with additional textile materials with better comfort proprieties, like cotton or bamboo. The paper present technical solutions to make such types of double layered glove made by knitting process on CMS 330 TC, E 5 Stoll knitting machine. The protective glove can be made entirely from double layer materials or it can have some zone of the gloves that are designated to ensure the protection

Key words: protective glove, double layer, weft knitting machine

3.13. THE COMPARATIVE STUDY OF THE WEFT KNITTED FABRICS WITH TUCK STITCHES

LAURA MACOVEI, VIORICA CREȚU, ALINA APREUTESEI
“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: lmacovei@tex.tuiasi.ro

Abstract. This paper presents a comparative study about the weft knitted fabrics with tuck stitches achieved on flat knitting machines. The objective of this paper is to show the meaning of the tuck stitch influence on the stitch length in the rib structure of different

ratio. For different variants of basic pattern, rib evolution with tuck stitch, it was calculated the stitch length and yarn length consumption L_c [mm]. This parameters was determinate theoretically on one side and on the anther side they was assumed from the knitting programme realised on M1 station of the CMS Stoll machine. Tuck stitches in different rib structure depending on their destination, leads to obtain the private characteristics, this being distinguished in the contents of the paper though the graphics and table.

Key words: weft knitted fabrics, basic patterns, tuck stitches, length of consumption.

3.14. ARCHITECTURE OF A FOOTWEAR COLLECTION ASSOCIATED TO CUSTOMIZED FOOTWEAR DESIGN

MARIANA PĂȘTINĂ (COSTEA), MARTA-CĂTĂLINA HARNAGEA, AURA MIHAI, STAN MITU, FLORENTINA HARNAGEA

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: mpastina@tex.tuiasi.ro

Abstract. The aim of this study was to develop an adapted methodology for building changeable variants from a generic footwear product. The reference model and the models developed for the collection were interactively designed, with the help of Delcam-Crispin integrated system. The result is a realistic 3D view of the collection models, ideal for virtual presentations to the beneficiary, before the actually achievement of the prototype. Analysis and selection process is based on a number of well established criteria and it can be done through these virtual models, with real cost reducing effects on the prototypes. The paper also contains a questionnaire-based study and its results highlight the practical selection of footwear models before the beginning of the manufacturing process.

Key words: design, footwear, product family, questionnaire-based study

3.15. DEFORMATION MECHANISMS IN KNITTED FABRICS. MAJOR DEVIATIONS FROM THE SIMPLIFIED GENERAL MODEL

MARINA ROMAN, CIPRIAN SAVA, COSTEA BUDULAN

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: roman.marina@yahoo.com

Abstract. SGM is an idealized diagram. It aims at illustrating a common unitary representation for the general characteristics of the elongation of all the textile tubes by eliminating the particularities of a certain experiment that is not to be found in other situation. In the case of SGM, the stress-strain diagram is characterized by three regions: a straight-line segment followed by an increasing convex curve and then by a new straight-line segment with a higher inclination than the first one.

Key words: knitted fabrics, major deviations of diagram

3.16. DEFORMATION MECHANISMS IN KNITTED FABRICS MINOR DEVIATIONS FROM THE SIMPLIFIED GENERAL MODEL

MARINA ROMAN, CIPRIAN SAVA, COSTEA BUDULAN

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: roman.marina@yahoo.com

Abstract. The stress-strain diagram contained by the SGM is made of three regions: a straight –line segment followed by an increasing convex curve and then by a new straight – line segment with a higher inclination than the first one. The SGM parameterization consists of: Establishment of linear equations for end segments; Choosing a functional model for the central area either through a refined enough interpolation technique or through the parameterization of the curve that unites the end points keeping their monotony and convection; ensuring the continuity for the global function (restriction grade C^0) which eventually implies fulfilling restriction C^1 and then C^2 .

Key words: knitted fabrics, minor deviations diagram

3.17. THE ASPECTS OF ERGONOMICAL CRITERIA USED IN DESIGNING OPTIMAL PROTECTION CLOTHING

ALA DABIJA

Technical University of Moldova,

Light Industry Faculty

Abstract: This work presents the theoretical and practical issues concerning the main types of work required for research positions of ergonomical indicators in order to design the optimal building universal protective clothing consisting of short overalls. Using literature sources, were characterized a series of positions so extreme special clothing for users of specific public utility service operators in Moldova. The operators' category selected for the study is the registrars of electricity meters, the repair of electrical power system operators to install water meters, gas. As a result of complex schemes were developed the interdependence of the "man - clothing 'in the dynamic position" standing" and" sitting “, classifying the movements studied by operators working analyzed, presented by figures 1 and 2. In the study the frequency of meetings of the working positions for users of protective clothing mentioned were prepared diagrams (fig. 3 and 4) the specific movements that characterize the operators and their frequency of meeting of all the complex movements performed.

Key words: ergonomic criteria, optimization, extreme positions working in static positions, the dynamic position, the protective clothing.

4. IT APPLICATIONS CAD/CAM SYSTEMS FOR KNITTING AND CLOTHING

4.1. THE APPLICATION OF THE SEMANTIC WEB AND ITS TECHNOLOGIES IN THE TEXTILE & CLOTHING SECTOR

**AGIS PAPANTONIOU¹, SAVVAS VASSILIADIS¹, MIRELA BLAGA²,
PANAGIOTIS SKORDILAKIS¹, TRYFON-DIONYSIOS KARAGIANNIS¹,
NIKI MELA¹ AND GEORGE LOGIOS¹**

*¹ Technological Education Institute (TEI) of Piraeus,
Department of Electronics, Piraeus, Athens, Greece*

*² "Gheorghe Asachi" Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management*

Email address : apap@teipir.gr

Abstract. In the Textile and Clothing sector, there is a huge amount of information available for potential use. The dynamic character of the design of new products in conjunction with the continuous evolution in the development of new materials and production methods increases the related information. The retrieval and the logical correlation of the useful information requires the development of advanced and intelligent tools. Nowadays, the evolution of the Semantic Web and its technologies dominate the data and knowledge exchange over the Internet. This paper describes in a simple way how these technologies can be applied in the Textile & Clothing sector. Existing ontologies developed within the context of the Onto-Moda Leapfrog project are extended and Semantic Web Rules Language rules are applied to the ontology concepts, producing new knowledge.

Key words: Ontologies, Knowledge-based systems, Onto-Moda,

4.2. THE 3D REPRESENTATION OF THE WEFT KNITTED FABRIC

ECATERINA PINTILIE, CONSTANTA COMANDAR

*"Gheorghe Asachi" Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: tinap@tex.tuiasi.ro*

Abstract. The paper has as objective the development of the 3D concept in the representation of knitted fabrics, taking into account the thickness of the coil yarn and its spatial disposal in the knitted fabric structure. The content is focused on the manner in which we can design the elements of the coil and of the different types of coils encountered in the weft knitted fabric structure (single jersey, purl, patent 1:1, patent 2:2 and derived single jersey) for which the 3D models are achieved.

Key words: 3D knitted fabric representation, simulation, coil of single jersey type, patent, purl

4.3. MODELLING OF WARP KNITTED STRUCTURES - FROM PRODUCTION DATA TO 3D GEOMETRY

YORDAN KYOSEV , WILFRIED RENKENS

Hochschule Niederrhein – University of Applied Sciences, Mönchengladbach, Germany

Renkens Consulting, Aachen, Germany

Email address: yordan.kyosev@hs-niederrhein.de

Abstract. In this paper an overview of a 3D modelling method and software for warp knitted structures is presented. Results, based on fast, geometrical models for single and double needle bed structures, with weft insertions, spacer fabrics, tubular fabrics etc. are shown. New, more precise and more complex models, based on computational mechanics are presented, too. These methods allow more precise simulation of the yarn geometry, but need more computational resources and require certain computational experience of the users. The advantages and challenges of the both methods – geometrical and mechanical – are discussed. Suitable application areas of these methods are presented. Quick 3D simulation gives new chances to teachers for training and testing the knowledge of students and can be very useful especially for complex warp knitted structures with multiple guide bars and partial yarn threading. The exported geometry for extended FEM and CFD calculation gives researchers the possibility, to investigate warp knitted structures using modern computational methods, without taking long time for the preprocessing of the geometry.

Key words: warp knitting, modelling, 3D, spacer fabrics, FEM

4.4. PREDICTION OF THERMAL PROPERTIES OF KNITTED FABRICS USING ARTIFICIAL NEURAL NETWORK

ABHIJIT MAJUMDAR¹ , MIRELA BLAGA²

¹Department of Textile Technology, Indian Institute of Technology, Delhi, India 110016

²Gheorghe Asachi Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email: abhitextile@rediffmail.com,

Abstract: Thermal comfort properties of fabrics and clothing are gaining more and more importance in textile research with time. Knitted fabrics are generally used in winter as they offer good thermal insulation which is arising primarily from their high porosities. Bamboo fibre, a regenerated cellulosic fibre, can impart enhanced softness and improved anti-microbial properties to the knitted fabrics. This paper presents the modeling of thermal property of knitted fabrics made from cotton and bamboo fibre blended yarns using artificial neural network system. Five variables namely knitted fabric structure type, yarn linear density, bamboo fibre proportion (%), fabric thickness and fabric area density were used as inputs to the artificial neural network model. The developed model was able to predict the thermal property of fabrics with excellent precision. The trend analysis of the developed neural network model revealed the influence of various input variables on the thermal properties of knitted fabrics. These findings can be used for the optimum selection of material and structural parameters of knitted cellulosic fabrics for a particular end use.

Key words: Artificial neural network, Bamboo, Cotton, Knitted fabrics, Porosity, Thermal properties

4.5. RECONSTRUCTION OF A 3D BODY SCAN MODEL FOR VIRTUAL GARMENT PROTOTYPING

**ZORAN STJEPANOVIČ¹, ANDREJA RUDOLF¹, SIMONA JEVŠNIK²,
ANDREJ CUPAR¹, VOJKO POGAČAR¹, JELKA GERŠAK¹**

¹*University of Maribor, Faculty of Mechanical Engineering, Slovenia*

²*Academy for design, Ljubljana, Slovenia*

Email address: stjepanovic@uni-mb.si

Abstract. 3D body scanning technology represents a great potential for textile industries and above all for producers of garments. It enables fast and reliable capture of 3D body data and extraction of precise measurements needed for design, construction, visualisation and animation of garments on virtual mannequins. However, there are also some problems related to the scanned body models, caused by the scanning technique. In this contribution we are discussing the techniques for reconstruction of the body models and its results using the example from one of the competitive sports clothing - ski-jumper suit. Virtual prototyping become a topic of increasing interest of both, computer graphics and computer-aided design for apparel production. These technologies are especially important when a garment prototype should be developed for special purpose such as ski-jumper suit. Namely, shape and size of a jumpsuit need to be individually adapted to each ski-jumper according to the exact requirements by FIS (Fédération Internationale de Ski). The FIS requirements change annually or even more often in order to assure ski-jumpers' safety during competitive ski jumps. The conventional body measurement technique and development of ski-jumpers pattern are time consuming. In order to develop an accurate and rapid design, as well as an adaptable and quickly changeable jumpsuit, different modern technologies were used. The obtained virtual prototypes of a ski-jumper and a jumpsuit enable both - fast re-modelling according to FIS rules and expeditious development and/or simulations of a jumpsuit. All these measures are taken to improve the aerodynamic design of a suit and jumper's result. In our study we have used different computer graphics programmes in order to reconstruct and prepare the 3D body scan model for successfully importing it into OptiTex CAD programme.

Key words: 3D body scanning, scan data, scam models reconstruction, ski-jumper's suit, virtual prototyping

4.6. STUDY ON VIRTUAL MANNEQUIN THE 3D FIT GARMENT SIMULATION

ELENA FILIPESCU

"Gheorghe Asachi" Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: elena.filipescu@yahoo.com

Abstract. With the increased desire among customers for individualized and customized fashion products, an interest in 3D virtual garment simulation has been growing throughout the world. 3D garment simulation has used for many things, such as virtual fashion shows, online fashion communities, the virtual trying-on of garments, and more. The present paper aims to realize a dress garment simulation. The result will be the testing of the 2d designed pattern after the fitting on the virtual mannequin using specialized 3D software.

Key words: 3D garment simulation, parameterized mannequin, fit simulation

4.7. 3D SIMULATION FOR THE INDIVIDUALIZED GARMENT

ECATERINA PINTILIE, ELENA FILIPESCU

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: tinap@tex.tuiasi.ro

Abstract. The challenges of virtual garment simulation are numerous, and have attracted research efforts for more than a decade. First dedicated to the realistic simulation of the mechanical behaviour of cloth, it soon evolved towards simulation of virtual garments on synthetic characters. While computer graphics gets the most obvious benefits from garment simulation on animated virtual characters, virtual prototyping of garment models is another major application field for the garment industry. The 3D clothing fitting on a body model or a virtual mannequin is an important research topic in the garment computer design. 3D prototyping of garment samples, visualization of a garment, and verification of its construction elements are becoming critical to reducing development stages and going to production more quickly. Thus, during the fitting process, the match between the clothing and body models is still a problem for researchers. In order to resolve this issue the present paper aims to test a dress pattern designed in 2D by using a new algorithm, using a 3D virtual model. The basic dress pattern is done using the V6R1 Modaris program and testing it on the mannequin was made using Modaris 3Dfit V5R2.

Key words: 2D patterns, testing, 3D simulation

4.8. A NEW APPROACH IN THE FEMALE BODY FORM CHARACTERIZATION FOR CONSTRUCTION OF INDIVIDUAL CLOTHING

ELENA FILIPESCU, STAN MITU

“Gheorghe Asachi” Technical University of Iasi,

Faculty of Textile, Leather and Industrial Management

Email address: elena.filipescu@yahoo.com

Abstract: Dimensional correlation between the body and the product is a basic requirement when customers wish to purchase garments from network stores. In clothing design to achieve this requirement is necessary to use information on morphological variants of the users. In this context the paper presents results of researches which allow the women bodies characterization by type, by a comparison of anthropometric sizes which provide information on body shape in the frontal and anterior-posterior plane. The differences of frontal and anterior-posterior diameters were analyzed, diameters which are characterizing dimensional the chest and hip region, in frontal and anterior-posterior plane. The research has enabled the classification of the women bodies in three basic types, which reflect the body shape in frontal and anterior-posterior.

Keywords: body shape, front diameter, anterior-posterior diameter, statistics, body types, women.

4.9. REALISTIC BODY MOTION SIMULATION

RALUCA MARIA AILENI, DANIELA FARIMA, MIHAI CIOCOIU

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: railenei@tex.tuiasi.ro*

Abstract. The paper present aspects in human body motion simulation. The human animation rendering comes with two distinct problems: the first is in motion of the hierarchical structure and the second is in human body deformation. The modeling and deformation of 3D human bodies during the animation process is a difficult problem. Researchers have tried different representation of the human body dynamic deformation. In this paper will be use a human body deformation model based on multi –layered model.

Key words: simulation, motion, 3D, body, mesh.

4.10. SIMULATION OF DEFORMABLE TEXTILE SURFACE FOR GARMENTS

RALUCA MARIA AILENI, DANIELA FARIMA, MIHAI CIOCOIU

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: railenei@tex.tuiasi.ro*

Abstract. The paper present a technique for cloth simulation. The simulation of the garment is very difficult because the cloth may have a complex collisions with the environment. The simulation of the garment have many fields application in computer graphics, design, e-commerce and entertainment (video games, avatars-second life). The garment simulation depends on the posture and motion of the body, textile surface slide, bend, shear and on the drape around the body with particular motion and deformation on time . By using the virtual garment simulation, the virtual prototyping process is made on the computer desk and in real world it can develop the final validation of the garment prototypes.

Key words: garment, prototype, 3D, virtual, drape.

4.11. 3D SCANNING TECHNOLOGY – A NEW PERSPECTIVE IN GARMENT MANUFACTURING

**CLAUDIA NICULESCU¹, SABINA OLARU², ADRIAN SALISTEAN³,
EMILIA FILIPESCU⁴, MANUELA AVADANEI⁵**

*The National R&D Institute for Textiles and Leather, Department of Research the Textile
Systems for Aeronautics^{1,2,3}Romania
“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management^{4,5}
e-mail: certex@ns.certex.ro*

Abstract. This paper presents a new technique (3D body scanning technique) for measuring body dimensions. These data are used to elaborate standard for achieving mass customized production system and production of individualized garments, as well as in solving problems related to sizing, fitting and manufacture clothing. The results of statistical analysis of 3D anthropometric data are concentrated in two projects of normative

relating to body size, body types and garment sizes. The paper underline some possibilities of application of anthropometric data in other scientific and engineering fields, such as: anthropometry studies, medical devices design, surgery and ergonomic design in the furniture, automotive, aviation industries and in assessing the population health status.

Key words: 3D scanning; anthropometric investigation, anthropometric data; body types; customized pattern

4.12. COMPUTER AIDED GARMENT DESIGNING

AUSMA VIĻUMSONE & INGA DĀBOLIŅA

Riga Technical University, Institute of Textile Materials Technologies and Design

Email address: ausma.vilumsone@rtu.lv

Abstract. Basing on a literature study and a systematic analysis of the structure of complicated objects, the paper justifies the necessity to design clothing in 3D computer systems and gives suggestions on using anthropometrical data in 3D clothing designing, identifies 2D and 3D designing types. A structural scheme of the production process, identifying the processes of typical production with the goal to determine the mutual relationship of the production preparation processes and the structure of the informative and software means, has been developed; it has been concluded that no matter what level CAD/CAM system is used, their usage provides a faster development of the product and shortens the working process. A complete 3D designing process would exclude different working stages connected with constructing and constructive modelling, 3D imitation and creation of a virtual prototype.

Key words: CAD systems, design, modelling, pattern

4.13. AUTOMATIC SOLUTION FOR DESIGNING GARMENT PATTERNS

**MARIUS DIACONU¹, MANUELA DIACONU², CLAUDIA NICULESCU³,
MANUELA AVADANEI⁴**

Diaman Art, Iași^{1,2}, Romania

INCDTP, Bucharest³, Romania

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management⁴

Email address: mdiaconu@diamanart.ro

Abstract. The paper describes an application for designing custom-made garments entirely automatically, elaborated within the EUREKA G-CAD project – The National Plan for Research – Development and Innovation II. The program Pattern Design (in short, DM) capitalizes the advantages offered by the indirect body measuring method, through 3D scanning, by drawing the anthropometrical values automatically and generating patterns instantaneously. The project promotes an original method of garment designing, “ready-to-wear”, based on a new type of algorithms, which generate an optimal correspondence between the pattern and the body, exclusively from the stage of pattern construction. DM is an attractive commercial application as it provides an alternative to the custom design software that are currently in use, which are extremely expensive and inaccessible to most of Romanian producers.

Key words: customisation, “ready-to-wear”, personalisation, 3D scanning, automatic designing

5. DEVELOPMENTS OF TECHNOLOGIES AND EQUIPMENTS

5.1. RESEARCH ON THE COMFORT FEATURES OF TEXTILE MATERIALS USED FOR POLICE UNIFORM

GIANINA BROASCA, DANIELA FARIMA, MIHAI CIOCOIU

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: gbroasca@tex.tuiasi.ro

Abstract: This paper presents one side the research results on the thermo characteristics effects on a textile materials group designed to achieve police uniforms and on the other side the results of the survey effects on the Border Police department. The survey's objective it was the information collecting, processing and interpreting about comfort police uniforms, information that enabled the objective selection from a number of experimental research results, those type of textile material, which can be considered the optimal in terms of wearing comfort.

Keywords : comfort, uniform, police, textile materials.

5.2. ASSESSMENT OF THE INFLUENCE OF THE STRUCTURAL, MATERIAL AND PROCESSING PARAMETERS ON THE KNITTED LOOP LENGTH WITH ANOVA

YORDANKA ANGELOVA¹, ALENKA PAVKO-CUDEN², ALES HLADNIK²

¹Technical University of Gabrovo, Bulgaria

²University of Ljubljana, Slovenia

Email address: jpa@tugab.bg

Abstract. Five different weft knitted structures (two double and three single), made of two materials ([poliacrylonitryle fibres](#) and viscose), two yarns (conventional and elasticized), in two densities (open and close) and relaxed by two procedures (dry and wet) were systematically explored. Impact of one or more factors on the loop length was studied. The measurement results were analyzed by multifactorial analysis of variance (ANOVA). The main structural parameters – factors – with the greatest impact are: density, knitted structure and relaxation. Important two-factor interactions are: material-yarn, yarn-relaxation and material-relaxation. The results of the 5×2^4 experiments were separated into two groups according to the yarn structure (conventional and elasticized). They were analyzed by 4-factorial ANOVA. It was established that within each of the two groups, density and fabric structure exhibit greatest impact on the loop length. Relaxation has much larger impact in the case of elasticized yarns than in the case of conventional yarns.

Key words: weft knitted structures, elasticized yarns, statistical analysis, ANOVA

5.3. USABILITY OF A PHOTOPLETHYSMOGRAPHY DEVICE FOR A BIOMEDICAL GARMENT

**VICTORIA MEČNIKA¹, EDGARS KVIESIS², ZBIGNEVS MARCINKEVIČS³,
RENĀRS ERTS², IVARS KRIEVIŅŠ¹**

¹*Riga Technical University, Institute of Textile Technology and Design*

²*University of Latvia, Institute of Atomic Physics and Spectroscopy*

³*University of Latvia, Faculty of Biology*

E-mail: viktorija.mecnika@rtu.lv

Abstract. Application of garments performing remote monitoring of physiological parameters is spread within the healthcare sphere and it might be especially useful for patients with cardiovascular system dysfunctions during rehabilitation and clinical conditions, e.g. as an auxiliary device for diagnostics. Present researches mostly concentrate on registration and analysis of cardiac parameters by electrocardiography (ECG). Another promising cardiovascular parameters registration method is photoplethysmography (PPG), which is relatively simple. The PPG absorption method is applied by developing commercial medical devices, but obviously the method of remission gives a wider range of possibilities for registration of cardiovascular parameters and is more appropriate for integrating an optical sensor into textiles. A prototype (head bandage) of a biomedical garment with an integrated wearable PPG model device has been developed and tested for remote monitoring of cardiac parameters (e.g. heart rate, R-R intervals). The major task of this paper is to evaluate usability of the PPG device for a biomedical garment, as well as to test reliability of the data registered by the developed prototype and by comparing them with cardiac parameters (heart rate and cardiac cycle length) registered by commercial medical reference devices.

Key words: wearable electronics, remote monitoring, cardiac parameters, heart rate.

5.4. RESEARCHES ON THE CHEMICAL TECHNOLOGY OF DYEING OVINE FURS WITH ACID COLORANTS

**GHEORGHE VIRGIL ATODIRESEI¹, DANUT PRODAN¹,
ANCUTA ELENA TULBURE¹, SEBASTIAN ANDREI PODARU¹,
ANA ATODIRESEI²**

¹*The Academic Federation of Scientists from Iasi Romania*

²*Technical University of Moldavia from Chisinau*

Email address: atodiresei_virgil@yahoo.com

Abstract. This paper presents the results obtained of dyeing sheep skin, used three dyeing acid: red, yellow and blue. The purpose was mainly the optimization of the dyeing in terms of the quantity of pigment fixed on the fur. The method that has been used for the study was the multiple regression method and by computer processing lead to obtaining some allowed the establishing of optimal dyeing parameters: colorant concentration, temperature and duration.

Key words: skin, dyeing acid, regression method, optimal parameters

5.5. DESIGN ELEMENTS FOR MANUFACTURING LINES IN THE CLOTHING INDUSTRY

GABRIELA IOANA VINTEA, STAN MITU

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address:glucas@tex.tuiasi.ro

Abstract: The paper presents some aspects regarding the design of manufacturing lines for garments. The paper deals with problems of evolution and development of process lines in line with the particularity of materials and complexity of garments. There are also introduced elements that define the manufacturing lines, specific for the clothing industry: operating parameters, lines balancing problems, calculation of the production areas and spatial arrangement issues. At the end of the paper it's presented a case study focused on the design and organized elements of a complex product manufacturing line, so a product with a large number of technological operations to made. The paper develops aspects of working time, production norm and the relations between handlings, movements, technological phases and technological operations.

Key words: process line, working time, balancing process line, work place, spatial arrangement.

5.6. FLEXIBLE MANUFACTURING SYSTEMS AND MODEL FOR A SOFTWARE DEVELOPMENT

GABRIELA IOANA VINTEA, STAN MITU

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address:glucas@tex.tuiasi.ro

Abstract. The paper develops aspects of specific concepts regarding the flexible manufacturing systems from the clothing industry and highlights the various possibilities for the improvement of the production process. The issues related to technical equipments flexibility, process flexibility and executants flexibility, the need to adaptation, organization and management of manufacturing processes based on more diversified requirements of consumers are treated. It's mentioned the importance of existence in these manufacturing systems of a computer program / software to ensure the interconnection of all processes, data flow, information and instructions flow within the system and to provide access to the information and decisions monitoring and control. There are given useful information necessary to creating such a program / software and first, it proposes a theoretical approach of how to create it.

Key words: diversified production, production flexibility, flexible process line, information system, specialized software programs.

5.7. THE ANALYSIS OF ULTRASONIC WELDING PROCESS DEPENDING ON THE THERMAL AND ACOUSTIC EFFECTS

AUREL POPP

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: aurelpopp@yahoo.com

Abstract. Welding textiles with ultrasound is a rapid process of assembling two or more types of materials at low temperature and low energy consumption. The experimental results showed that combining ultrasonic welding friction with the surface plasticity its decrease in volume. Thermodynamic analysis of the ultrasonic welding process shows that parameters such as clamping force, vibration amplitude and velocity of ultrasonic welding sonotrode directly influence the quality of the finished product. Further micro-structural analysis of the weld must be made in order to better understand the phenomenon of deformation that occurs in this process.

Key words: ultrasonic welding, thermodynamic analysis, clamping force, vibration amplitude, welding speed

5.8. PROCESSING OF TEXTILE MATERIALS WITH LASER BEAM

AUREL POPP

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: aurelpopp@yahoo.com

Abstract. The paper seeks to give a better overview on textile processing with laser beam. In the paper are carried out an evaluation of methods and effects that can be obtained, because in future this process could be used more easily. Because of multiplicity of fields of use, this process has enormous potential for processing in the textile industry. By processing textile materials we are raising the quality level and the method of presentation of part or finished product. Sharing this process in different categories is difficult to achieve limited conclusions due process that includes a huge range of use. Experimental results give us a few types of material to draw appropriate conclusions. Laser processing technology is not fully accepted by the textile industry. But when it replaced the various phases of technology research in this area will receive greater support

Key words: laser beam machining, cutting, melting, textiles, surface modification

5.9. SEAMLESS BY WARP KNITTING TECHNOLOGY

VIORICA CREȚU, LAURA MACOVEI

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: vcretu@tex.tuiasi.ro

Abstract. This article concerns of a recent new area of applications of warp knitting technology – the producing of complete garments. Known as the world leader in circular knitting machines for seamless garments Santoni enlarged its activity by building

double needle-bar raschel knitting machines for such garments. The paper presents the seamless knitting principle applied on its warp machines and its specific advantages.

Key words: seamless garment, knitting principle, advantages

5.10. INNOVATIONS IN LOOP FORMING ELEMENTS FOR CIRCULAR KNITTING MACHINES

VIORICA CREȚU, LAURA MACOVEI

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: vcretu@tex.tuiasi.ro

Abstract. The loop forming elements are precision tools directly implied in knitting process and must satisfy different requirements reflected in: a great productivity, based on a high knitting speed, a longer service life and a high quality of the knitted fabric, even the processing yarns are highly twisted and abrasive, lower production costs, by reducing handling time. In this idea, the paper presents some innovative solutions concerning the design and manufacturer of loop forming elements for large circular knitting machines, developed by Groz-Beckert. Among these solutions the work details the shank geometry of litespeed needle, the sinker and needle wear protection by optiloop coating, and a new sinker design for packaging them.

Key words: litespeed needle, optiloop coating, packaged sinkers

5.11. PRINCIPLE OF CREATING 3D EFFECTS ON KNITTED FABRICS DEVELOPED ON ELECTRONIC FLAT KNITTING MACHINES

MIHAI PENCIUC, MIRELA BLAGA, RAMONA CIOBANU

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: mpenciuc@tex.tuiasi.ro

Abstract. The paper relates to the basic principles of creating 3D effects on the knitted fabrics produced by using electronic flat knitting machines. The research aims at outlining the technical potential of this technology, based on examples developed on CMS 330 E5 and CMS 530 E 6.2 Stoll machines and programs designed on M1 pattern stations. The selected examples emphasise the knitted structure versatility for being used in different applications, from outerwear to technical end uses, by exploiting the unique capabilities of flat knitting machines to produce fabrics with a large variety of applications.

Key words: 3D effects, electronic flat knitting machines.

5.12. ANALYSIS OF MATHEMATICAL MODEL OF THE FRAME OF SMALL-DIAMETER KNITTING MACHINE

JOSEF SKRIVANEK, MARTIN BILEK

Technical University of Liberec

Faculty of Mechanical Engineering, Department of Textile Machine Design

Email address: josef.skrivanek@tul.cz

Abstract: Changes in the structure of essential parts of knitting machine yield. The significant reduction of production costs regarding the negative effects associated with such a decrease of stiffness in supporting of the machine parts. There is an elemental change in the structure, which is reflected in the dynamic behaviour of the entire system. For the above reasons, the mathematical model of the frame of the small-diameter knitting machine was constructed, which allows to assess the suitability of visco-elastic dampers in the application parameters of this knitting machine and the partial dynamic tuning of the system with respect to these parameters. This article deals with the determination of natural frequencies of the small-diameter knitting machine frame.

Key words: structure, stiffness, dampers, knitting machine

5.13. TRAVERSING MECHANISM FOR WINDING OF YARN WITH TRAVERSING CABLE DRIVEN BY TWO MOTORS

ANIL KUMAR, JAROSLAV BERAN

Technical University of Liberec

Department of Textile Machine Design

Email address: anil.kumar@tul.cz

Abstract. The new mechanism deals with the traversing of the yarn guides mounted on a carriage rail sliding assembly. The yarn guides are connected with a traversing cable made of Dyneema. The traversing cable is driven from both ends by servomotors. The static and dynamic characteristics of the Dyneema cable are evaluated experimentally. These characteristics are necessary for the dynamic analysis of the traversing mechanism, which is done using Pro/Mechanism tool. The main goal of this research is to evaluate the moment on the motor, the reaction forces on the sliding assembly, the variation in displacement of the sliders and primarily the dynamic characteristics of the entire traversing mechanism.

Key words: Traversing mechanism, dynamic analysis, Dyneema cable, servomotor

5.14. DETERMINATION OF PENETRATION FORCE DURING SEWING PROCESS OF LEATHER

KAREL PEJCHAR, JAROSLAV BERAN, PETR KRPEŠ

Technical University of Liberec

Faculty of Mechanical Engineering, Department of Textile Machine Design

Email address: karel.pejchar@tul.cz

Abstract: The paper is concerned with measurement of penetration force which was realized on the sewing machine with a floating needle which imitates hand stitch. Methodology of the measurement was established. The methodology enables to determinate the magnitude of the penetration force in the process of sewing for different samples of leather and for various modes of sewing machine. The stitch plate was modified and optimized for needs of measurement. It was possible to capture deformation on the stitch plate which was caused by needle penetration into the sewn material. Deformation was captured by means of tensiometric sensors, the obtained electrical signal was convert to the acting penetration force which was evaluated. The methodology was used for measurement of penetration force of leather material.

Key words: penetration force, strain gauge,

5.15. EXPERIMENTAL RESEARCH ON THE USE OF SYMPATEX FILM IN GARMENTS WITH RAINCOAT REPLACEMENT

**IONUȚ DULGHERIU, CRISTIAN - CONSTANTIN MATENCIUC,
STAN MITU**

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: idulgheriu@tex.tuiasi.ro

Abstract. The specific range of waterproof textiles is varied if you consider the fact that they may be fireproof, teflon-coated, and waterproof. The latest technologies allow the use of these materials for outdoor clothing, work clothing with a very broad spectrum useful even in the army and police departments. The present papers distinguish aspects regarding the use of film structure as a laminated film, for making the raincoat replacement with comfort parameters which have specific limits for the conventional variants. It is presented the database which contains several variants together with the 2D and 3D processing, enabling the introduction of new optimization elements under the conditions in which the mass of these products and garment structures is significantly decreased.

Key words: Sympatex film, garment structure, coat substitute, comfort parameters, 2D and 3D systems

5.16. EXPERIMENTAL RESEARCH ON THE USE OF SYMPATEX FILM IN GARMENTS WITH RAINCOAT REPLACEMENTS Part I

**CRISTIAN – CONSTANTIN MATENCIUC, IONUȚ DULGHERIU,
STAN MITU**

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: cmatenciuc@tex.tuiasi.ro*

Abstract. The present paper shows how the Sympatex film can change the main parameters of influence of the comfort and garment structures relating to the product for outdoor clothing, namely: air permeability, resistance to air flow, resistance to vapor passage and thermal resistance. Irrespective of the use of so-called laminate structure and the product system, the clothing structure made under these conditions, in addition to being waterproof, wind resistance, but also vapor permeable structures can successfully replace conventional garment structures which have a bigger mass and a negative influence on the body's biological constants. Details of the present paper distinguish other advantages of using the Sympatex film and also of the database useful to process the information in 2D and 3D systems, introducing thus important elements of product optimization and clothing structures.

Key words: Sympatex film, garment structure, raincoat replacement, comfort parameters, 2D and 3D systems

5.17. EXPERIMENTAL RESEARCH ON THE USE OF SYMPATEX FILM IN GARMENTS WITH RAINCOAT REPLACEMENT IIND PART

CRISTIAN – CONSTANTIN MATENCIUC, IONUȚ DULGHERIU, STAN MITU

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: cmatenciuc@tex.tuiasi.ro*

Abstract The present paper shows how the Sympatex film can change the main parameters of comfort influence of garment structures associated with outdoor clothing, namely: air permeability, resistance to air flow, resistance to vapor passage and thermal resistance. Irrespective of the use of so-called laminate structure and product system, the clothing structure made under these conditions, in addition to being waterproof and wind resistance, but also vapor permeable structures can successfully replace conventional garment structures which have a bigger mass and a negative influence on the body's biological constants. Details of the present paper distinguish other advantages of using the Sympatex film and also of the database useful to process the information in 2D and 3D systems, introducing thus important elements of product optimization and clothing structures.

Key words: Sympatex film, garment structure, raincoat replacement, comfort parameters, 2D and 3D systems

5.18. RESEARCHES REGARDING THE ACHIEVEMENT OF AN AUTHOMATIC CONCEPTUAL SYSTEM GUIDING THE KNITTED FABRICS PROPRETIES

CRISTINA URZICA, BEATRICE GIUGARU

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: cristurzica@gmail.com*

Abstract. The thermodynamics sees the human body as an automatic temperature controller because it establishes its own temperature regardless of ambient temperature. The conceptual model below shows that the human body aims at controlling its temperature according to the optimum temperature for size.

Key words: authomatic system, knitted fabric

5.19. CONTRIBUTIONS ON EXTENDING POSSIBILITY ASSAY THE FABRIC ON UPON REQUEST OF BENDING

CARMEN MIHAELA POPA , VASILE CREȚU

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: kamympm@yahoo.com*

Abstract: The paper proposes and verifies an alternative of standard methods for testing the fabrics behavior to flexion / bending through measurements performances spreading for a testing tensional proprieties system. The proposed method consists in the ascertaining of the energetically balance sheet indicators: bending deformation energy, bending return energy, resilience and hysteresis and it represent an alternative to the KES / Kawabata method. The proposed parameters for the flexion fabrics behavior estimate are similar to the Kawabata parameters but they are determinate in different metrological condition. Testing a range of fabrics especially for ready – made clothes, realized by identical threads for the warp and weft systems, has followed the method relevance.

5.20. CONTRIBUTIONS ON EXTENDING POSSIBILITY ASSAY THE DETACHMENT FORCE FOR THE FABRIC CONSOLIDATED USING THE THERMO – ADHESIVE PROCESS

CARMEN MIHAELA POPA

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: kamympm@yahoo.com*

Abstract: This paper analyze the detachment force for the fabrics consolidated using the thermo-adhesive process. It is used a new method for the detachment of the fabrics consolidated using the mentioned method: the detachment through the drawing of

the fabrics on the longitudinal way. Unlike the classic method that makes the detachment using the drawing on the axial way the new proposed method has as pompous the elimination of some of the disadvantages of the classical method by changing the detachment manner. The consolidation of the wire systems on different directions shows the possibility of some consolidations that are different depending on the fabric length, the density etc. the consolidation degree, measured through the longitudinal detachment force F_d can have different values depending on the orientation of the tread on the attachment and detachment of the linkage and the density of the tread system. The study on this paper shows a new measuring method for the detachment force (realized through the detachment of the consolidated fabrics on the longitudinal way), that is different than the classical method (the detachment of the fabrics consolidated id made on the axial way)

5.21. TREATMENT OF TEXTILE COLORED EFFLUENTS USING SORPTION ONTO INDUSTRIAL CELLOLIGNIN WASTES

DANIELA SUTEU¹, CARMEN ZAHARIA², GABRIELA RUSU²

²*“Gheorghe Asachi” Technical University of Iasi, Romania*

¹*Faculty of Chemical Engineering and Environment Protection,*

Department of Organic and Biochemical Engineering,

Email address: danasuteu67@yahoo.com

Abstract: Batch sorption studies were carried out for the sorptions of Methylene Blue cationic dye onto wasted cellulignin that acts as low cost sorbent. The studies indicated that the sorption process was influenced by the experimental conditions: pH, initial dye concentration, sorbent dose and temperature. The obtained results of the tested dye sorption - Methylene Blue onto cellulignin waste concluded that the cellulignin waste can be used as an adequate sorbent into the decolourization of textile effluents.

Key words: cellulignin, experimental parameters, Methylene Blue dye, removal, sorption

5.22. LOCAL SIMPLE DEVIATIONS OF THE FIRST KIND EXISTING IN THE KNITTED FORCE-EXTENSION DIAGRAM

TEODOR CIPRIAN SAVA, MARINA ROMAN

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Chemical Engineering and Environment Protection,

Email address: ciprisava@yahoo.com

Abstract. The force-extension diagram plays an important part in establishing knit physical properties, such as tension strength or resistance to pressure exerted by tubular products. Based on an idealised diagram model, the practical tests have shown several classes of deviations from this model. The article contains a detailed analysis of triangle-shaped trend deviations.

Key words: simplified general model, characteristic function

5.23. LOCAL SIMPLE DEVIATIONS OF THE SECOND KIND EXISTING IN THE KNITTED FORCE-EXTENSION DIAGRAM

TEODOR CIPRIAN SAVA, MARINA ROMAN

*“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Chemical Engineering and Environment Protection,
Email address: ciprisava@yahoo.com*

Abstract. The force-extension diagram plays an important part in establishing knit physical properties, such as tension strength or resistance to pressure exerted by tubular products. Based on an idealised diagram model, the practical tests have shown several classes of deviations from this model. The article contains a detailed analysis of trend jumps on smaller value sections in the case of knitted breaking.

Key words: simplified general model, characteristic function

5.24. A RESEARCH ABOUT FEATURES OF COMPUTERIZED CUTTING SYSTEMS IN APPAREL

**ESRA DIRGAR¹, OKSAN KANSOY¹, M. CETIN ERDOGAN²,
ERHAN KIRTAY²**

*¹Ege Universitesi Bergama Technical and Business College, Bergama/Izmir/TURKEY
²Ege Universitesi Engineering Faculty Textile Engineering Dept. Bornova/Izmir/TURKEY
Email address: esra.dirgar@ege.edu.tr*

Abstract. In apparel manufacturing, experience and subjective assessment of production planners are used quite often to plan the production schedules in their fabric-cutting departments. The quantities of cut-pieces produced by fabric-cutting departments based on these non-systematic schedules cannot fulfil the cutpiece requirements of the downstream sewing lines and minimize the makespan. In this research, in apparel manufacturing, computerized cutting system which is used in cutting department and its advantages in production have been examined. In this stage, questionnaire has been applied apparel firms in Turkey which use computerized cutting system. With using computerized cutting system, the capability of production, variety of worker numbers, problems with cutting, industrial accidents spare parts and repair costs have been studied.

Keywords: Fabric Cutting, Computerized Cutting System, Cutting Cost, Apparel Manufacturing,

6. MANAGEMENT AND MARKETING QUALITY ASSURANCE

6.1. FOR SUSTAINABLE DEVELOPMENT AS REGARDS PREVENTION, SAFETY AND HEALTH AT WORK IN A COMPANY

**RACHID CHAÏB¹, ION VERZEA², MOHAMED BENIDIR¹,
AHMED BELLAOUAR¹**

*ILaboratory of Engineering of Transport and Environment, Faculty of engineering,
Mentouri University, Constantine, Algeria.*

*2“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: r3chaib@yahoo.com*

Abstract: For moral reasons, legal and economic, health and safety of each person, property safety and environmental protection are key objectives common to different sectors without exception. Unfortunately, today in practice, the situation is significantly more complex. Thus, continuous improvement and ongoing safety, health and protection of employees needed and becomes everyone's business. This objective can be achieved and guaranteed only by the existence within each company, of a policy turned towards prevention. Experience has shown that the establishment of a system of safety management and health is one of the best means to achieve this goal. Today, technological progress and intense competitive pressures lead to rapid changes of conditions, work processes and organization. The cost of the accidents and diseases is exorbitant for the whole of the company and even more for the company (continued rise of the absenteeism, disruption of ongoing work, loss of production, etc). The legislation is necessary but not sufficient to face these changes or to remain abreast of new risks. Therefore, organizations must be current, capable of fighting against the problems arising in safety and health at work and to react effectively in dynamic management strategies. The purpose of this paper is to guide those responsible for safety within the various economic sectors to identify problems and gaps in current prevention practice and to identify from future orientations for the preservation of our heritage.

Key words: Management, improvement, safety, risk, prevention, measures and action.

6.2. MAINTAINABILITY BREAKEVEN POINT

**ION VERZEA¹, RACHID CHAÏB², MOHAMED BENIDIR²,
AHMED BELLAOUAR²**

*¹“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management*

*²Mentouri University of Constantine, Algeria
Email address: verzea2000@yahoo.com*

Abstract: Maintainability is the characteristic of a system to be easy to maintain and to be easily restarted in a specified operating condition, after the occurrence of a defect.

In the case of this concept, a measure of maintainability is MTTR (Mean Time To Repair), which is proportional to the variable costs of maintenance. In our research we will try to define the maintainability break-even point, the minimum maintainability of a technical system, necessary to cover the inherent costs related to its operating and from where the company / the equipment starts to have a profit. We will use the example of a knitting machine.

Key words: maintenance, maintainability, MTTR, Maintainability Breakeven Point

6.3. DOCUMENTARY RESEARCH ON HOW TO FORECAST THE MATERIAL-INFORMATION DUALITY WITHIN LOGISTIC FLOWS

NICOLAE CONSTANTINESCU

“Lucian Blaga” University Sibiu, Romania,

“Hermann Oberth” Faculty of Engineering

E-mail: nicolae_constantinescu_sb@yahoo.com

Abstract. The present paper shows the role and importance of logistics for goods and services, with the purpose of getting a competitive advantage. A short description of the concept of logistics shall be presented in this paper. Because of the immeasurable role of logistics within the human society’s economic development, organisations from different fields of activity gather, having cognitive and commercial purposes, in order to support the development of this activity and more especially to make businesses more modern. The research shall outline the coordinates of a well-organised, client and performance-oriented logistic activity. As a conclusion of this research, logistics have various valuable approaches, being unable to state that we are dealing with a standard definition, which will serve as an axis for future researches. Considering that both the principles and methods applied to logistics are the same, a new approach is proposed: “logistics as a cross function of the enterprise”. In order to support this theory, we begin with the idea that logistics can be found and is related to all functions of the enterprise, ensuring the proper development of all types of flows, either material, or informational.

Key words: internal and external logistics, reverse logistics, logistics – the enterprise’s cross function.

6.4. AspectS REGARDING THE FINANCIAL-ECONOMICAL DOWNFALL IMPACT OVER THE TEXTILE-GARMENTS SECTOR

**RAZVAN SCARLAT; EFTALEA CARPUS; EMILIA VISILEANU;
DOROGAN ANGELA**

The National R&D Institute for Textiles and Leather – Bucharest, Romania

Email address: certex@ns.certex.ro

Abstract. Sustainable economic growth and life standard improvement of the population are determined by the economy competitiveness development within the context of global challenges (economy globalization, international markets opening, fast technological changes), challenges that should be transformed into opportunities by the Romanian economy, the more so in the period of economic crisis that hit the textile-

clothing industry from Romania, which had already passed a difficult period in the last three years, undertaking a re-structuring process.

For the textile-clothing sector assessment, we ran through the following stages:

- ✓ A questionnaire conceiving and distribution;
- ✓ Analysis of data collected (progress, hierarchy, comparative study)
- ✓ Set up of the informatics system (database).
- When quantifying the answers received, in case of questions supposing qualitative considerations, a certain score was assigned. Among the 5 sections of the questionnaire, results are presented for 9 parameters considered relevant in identifying the problems the textiles-clothing sector faces.

Key words: competitiveness, industrial parameters, questionnaire, development regions, competition

6.5. ROLE AND INFLUENCE OF STATE OVER INNOVATION PROCESS AND IMPLEMENTATION OF INNOVATION IN SMALL AND MEDIUM ENTERPRISES

ALINA LUCA,

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: alisluca@yahoo.com

Abstract. The objective of research is to identify the place and role of the state in innovation activity and also in innovation implementation in SMEs. The paper tries to implement the concept of innovation-assistance, innovation-support, innovation-state. The issue is very actual because Romania wants to align with other countries with knowledge-based economies and by the fact that the current economic crisis can not go out without innovation (products / processes). These goals can be achieved only with state involvement in real terms in business innovation and its implementation in SMEs. The paper is original due to the fact that very few works refers to innovation in SMEs and fewer refer to innovation applied in SMEs. Innovation literature is almost exclusively attributed to the scientific, academic field. In order to pursue studies were conducted interviews with managers of firms and also with executive staff. Questionnaires were developed and applied to a total of 70 SMEs in the municipality of Iasi. Also the study takes into account the consultation with relevant legislation in force for innovation. Expected results of the paper is identifying the strengths and weaknesses, opportunities and threats of state intervention in business innovation and its implementation in SMEs and also finding solutions. The paper is also important for academic field because could change the curriculum so that innovation and entrepreneurship to become a current practice among Universities. Furthermore makers of law could adapt the legal framework so that innovation to become a common practices in SMEs not exceptional so the entrepreneurship to want more innovation in their own companies, rather than imitation. The value added would be incontestable.

Keywords: State, innovation, innovation-support, implementation of innovation, SMEs.

6.6. MANAGEMENT ROLE OVER THE INNOVATION PROCESS AND IMPLEMENTATION OF INNOVATION IN SMALL AND MEDIUM ENTERPRISES

ALINA LUCA,

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Email address: alisluca@yahoo.com

Abstract. This paper want to study the place and role of the management in innovation activity and in innovation implementation. Obectivul research is to identify the place and role managementului in innovation activity and innovation implementation in SMEs. The work is important because company management is decisive in whether or not to implement an innovation, and consequently, in creating profit for company. The problem is the currency in Romania crisis that had just crossed, innovation is the only possibility for companies to remain on the market. In order to pursue studies were conducted interviews with managers of firms, but also executive staff. Questionnaires were developed and applied to a total of 70 SMEs in the municipality of Iasi. Academic study is important because it must adapt their curriculum so that future managers will not look me in business innovation as a deviation from a line drawn, on the contrary, and to encourage it. Another research study is influenced by that process must become organized, and have to descend from the ivory tower of research institutes and to adapt to market demands. Policy makers may take into account the study, and identify ways to encourage managers to support innovation in the SMEs. The paper is original in terms of bringing together two activities: innovation and entrepreneurship as activities that are intertwined, given that everybody talks about innovation as an activity that takes place in academia and on SMEs as entities that deal with other things, but not with research.

Keywords: Innovation Interim management, implementation, SME

6.7. THE FUNCTIONAL PERFORMANCE ANALYSIS FOR A POLYVALENT TECHNOLOGICAL MANUFACTURING LINE

SIMI STAȚIERU, PULFERIA NICOLAIOV, FLOREA ADELA

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Abstract. Improving business performance at working systems level, in order to increase the customers' degree of satisfaction is a priority for the competitiveness of garment producers. The paper is based on a case study concerning a functional performance analysis of a manufacturing line for outerwear products for women. The paper proposes a systematic approach to the functional performance of the technological line, through the evaluation of the participation of systemic elements in the materialization of customer requirements and the implications at line management level. The research work includes: the systemic definition of the technological line; the critical analysis of performance level, in terms of product quality and safety of delivery terms and interpretation of results;

identification of principles for performance improvement of the technological line and estimation of the effects of proposed improvements, at system performance level. The identification of the criteria for performance improvement require to: prioritize the custom and process oriented interface as well as the involvement at line management level; optimize the planning, programming and launching, implement teamwork; systematic approach the gradual change resulting from continuous improvement processes, given the capacity to assimilate and implement changes.

Key words: quality, competitiveness, line management, teamwork.

6.8. YARNS QUALITY ASSURANCE DEPENDING ON THE SPINNING SYSTEMS. PART I

RODICA HARPA

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: rharpa@tex.tuiasi.ro

Abstract. This paper will deal with two of the leading topics of the yarn quality characteristics: the consistency (by mean of evenness) and the yarn surface integrity (by mean of the hairiness). In Part I of this paper will be describing the interpretation of the USTER® TESTER 4 report and available graphical representations in order to evaluate yarn quality and to prevent misunderstandings that can result in wrong decisions in knitting.

Key words: yarn, ring- spinning, rotor- spinning, consistency, surface integrity

6.9. YARNS QUALITY ASSURANCE DEPENDING ON THE SPINNING SYSTEMS. PART II

RODICA HARPA

“Gheorghe Asachi” Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management
Email address: rharpa@tex.tuiasi.ro

Abstract. This paper will deal with two of the leading topics of the yarn quality characteristics: the consistency (by mean of evenness) and the yarn surface integrity (by mean of the hairiness). After Part I statements as a rule for the yarn evaluation by mean of test report and graphics representations, in Part II will be describing the actual USTER® TESTER 4 reports and the available graphics evaluations for 24 Ne (25 Tex) yarn spun from 100 % carded cotton, by mean of both ring and open end spinning systems and designed for knitwear.

Key words: yarn, ring- spinning, rotor- spinning, evenness, hairiness

6.10. INVESTIGATION ON SINGLE JERSEY GEOMETRICAL AND MECHANICAL PROPERTIES

MARIANA URSACHE, IRINA IONESCU, CARMEN LOGHIN

“Gheorghe Asachi” Technical University of Iasi Romania

Faculty of Textiles, Leather and Industrial Management

Email address: ursache@tex.tuiasi.ro

Abstract. The quality of the knitted fabrics are influenced by several factors that can be included in three main groups, as follows: yarn characteristics, knitting process (machine characteristics, knitting parameters), relaxation and finishing process (type, finishing parameters). The aim of this study is to investigate the influence of yarn type, count and twist as well as the most important knitting parameter (stitch depth) on some geometrical and mechanical properties of single jersey fabrics. The single jersey fabrics were knitted on a small diameter circular knitting machine using five different cotton yarns (40Nm Open End spinning type with four different twist factors and 54Nm combed ring spinning type). The stitch depth was adjusted at four levels in order to obtain four different tightness factors for the knitted fabrics. Tensile tests on the resulted knitted fabrics were carried out on an electromechanical universal testing machine computer controlled. The measured results showed the influence of the selected characteristics and parameters on the knitted fabric properties after dry relaxation, before finishing. The results allow the prediction of the effect of the mentioned factors on the knitted fabric properties.

Key words: cotton yarns, stitch depth, tightness factor, dry relaxation, strength.

6.11. KNITTED EXTENSIBILITY IMPORTANT FACTOR IN EVALUATING THE ERGONOMIC FUNCTION OF MANUFACTURED PRODUCTS

ELENA MOISESCU, LILIANA LUTIC

“Gheorghe Asachi” Technical University of Iasi, Romania

Faculty of Textile, Leather and Industrial Management

Abstract. Extensibility is one of the most important characteristics of a knitted, determining greatly the ergonomic function of the knitted product. This paper contains a comparative experimental study, performed on many variants of knitted structures made out of cotton type yarns. The goal of this study is evaluating the ergonomic function of knitted intended for different zones or manufactured products, in order to conduct the quality in the designing phase.

Key words: knitted, extensibility, ergonomic function

6.12. THE ISSUES OF STANDARDIZATION AND EVALUATION OF CONFORMITY TO THE PERSONAL PROTECTIVE EQUIPMENT

ALA DABIJA

*Technical University of Moldova,
Light Industry Faculty*

Abstract: The paper summarizes the elements of documentary standards and conformity assessment of personal protective equipment, which is high risk at work. Under current conditions of production of PPE for the promotion of these products on the national market, international knowledge is required of a complex system of conditions and requirements imposed by the present legislation for the PPE, which relates to matters of compliance with the requirements of appropriate PPE. As these issues have been addressed in information to evaluate PPE , the way to demonstrate compliance with CE mark, by appropriate labeling.

Key words: compliance, standards, personal protective equipment, CE marking, labeling