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Possibility of benefiting from the impact of chemical treatments for fabrics in fashion design

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ABSTRACT: Appeared in the present era processing fabrics with some chemical treatments for improving properties of functional or to enable some to gain new properties or superficial different, which is usually after the completion of the stages of the weaving or knitting, where intervention fabrics in the process of treatment in many ways followed in many cases, either the process of dyeing or printing. Fabrics to gain the same kind of aesthetic decoration without recourse to the printed other techniques that use other decorative to give in the end aesthetics acceptable and appropriate clothing for the consumer. May, therefore, research focused on the possibility to take advantage of these processors in the work of the special effects on fabrics and what happens it changes the properties of these fabrics in terms of aesthetics, the purpose of career and then employ them for women after such treatments.

Is determined by the research problem in the study of the changes the properties of fabrics after chemical treatment, in order to benefit from the resulting impact on those fabrics and employment in the clothing to meet the requirements of the aesthetic and functional purpose of comparing the results of tests for the properties of fabrics before and after treatment to determine which properties can benefit from them and using them as clothing.In this reseach, Were identified fabrics under consideration by choosing the most widely in Global fashion trends for woman clothing and used among consumers in the market and appropriate clothing for the women's outer wear,we used eight types of fabrics (polyamide and cotton – polyester - cotton and polyester- viscose and polyeaster - viscose , polyeaster and polyamide- silk and polyester – wool and poly acrylic- viscoce and polyester), has been testing properties to be studied, a "% Loss in weight -% Loss in thickness- crease recovery- Stiffness " where such tests are conducted on fabric "before / after" treatment.

It has been possible to find a suitable materials and determine the suitability for use after processing, and design proposals appropriate to the properties of these materials in terms of aesthetic and functional purpose to produce as clothing women's outer wear.

KEYWORDS: burn out, crimping, crackle effect, Fashion trends, collections.

1 INTRODUCTION

Textile direction like naturally inspired,cloque jacquard,sheer sucker and crinkle effects,porous elements,fraying and fading,climatic cast,devastated and flawless we can do this effects by many methods of printing.[1,2,3] show figures(1,2,3,4)

Cotton is the purest from of natural cellulose, like all the vegetable tissues it, containts a small amount of minered matter that is left as an ash after cottonis burned. The amount of ash is about 1-1.5%. The mineral matter in cotton consists of chlorides, carbonates of potassium, calcium and magnesium. A large variation is observed in the amount coloring matter found in cotton. [4] , Some of the important vegetable fibers like flax,cellulose is the material that provides the thread- like molecule and fibrillar structure.differences in the properties of natural fibers of similar chemical constition.[5]

The effects of alkali and acid treatment on the mechanical ptoperties of coir fibers are reported tenacity and extension-at-break decrease with chemical treatment and ultraviolet radiation,where as an increase in initial modulus and crystallinity is observed with alkali treatment wool fibers can be stretched up to 30% without rupturing and still bounce back.wool and

silk can destroy the cross-links so that the molecules are free to stay in the new positions that they reach when the fibers are stretched.[6]

Fabric made up of amixture of fiber is also often carried out. There are some very elaborate an alytical instruments that can be used to identify the chemical composition of materials and fibers in most circumstance. [7]

In the solvents natural fiber could be distinguished from the synthentic fiber fairly well.thermoplastic fibers may dissolve in a common solvent like acetone.also some highly semi-crystalline like nylon and polyester will dissolve only in solvents like formic acid or boiling dimethyloformamide.natural fibers are thermosetting polymers,they are found to dissolve chemically in strong acid or base solutions.[4]

Natural disasters, crime, terrorist threat, and economical decline being the reoceurring focus of media, it isquestionable as to whether we are becoming too accustomed to such life changing, threatening events. [8, 9]

PROBLEM STATEMENTS

The research problem in the study of the changes the properties of fabrics after chemical treatment, in order to benefit from the resulting impact on those fabrics and employment in the clothing to meet the requirements of the aesthetic and functional purpose of comparing the results of tests for the properties of fabrics before and after treatment to determine which properties can benefit from them and using them as clothing**.**

THE AIMS OF THE RESEARCH

To find a suitable materials and determine the suitability for use after processing, and design proposals appropriate to the properties of these materials in terms of aesthetic and functional purpose to produce clothing for women.

THE RESEARCH APPROACH

The research follows the experimental and analysis approach.

THE LIMITS OF SEARCH

A source of inspiration for the designs of the proposed research is fashion trend of spring/Summer 2012/2013, that will earry you through to Autumn/Winter.

Fabrics Looks like this polyamide and cotton –polyester - cotton and polyester- viscose and polyeaster - viscose, polyeaster and polyamide- silk and polyester – wool and poly acrylic- viscoce and polyester.

THE RESEARCH HYPOTHESES

The research has been possible to find a suitable materials and determine the suitability for use after processing, and design proposals appropriate to the properties of these materials in terms of aesthetic and functional purpose to produce as clothing women's outer wear.

1.1 THE EFFECTS

1.1.1 BURN OUT

Printing a chemical paste, which burns away one of the fibers in a mixed fiber cloth when subjected to heat.this created patterns of open or translucent areas.contrasting with unaffected solid fibers,it is known as burn-out styles [9,10] There are principally two types of burn-out pastes namely an acid and an alkali paste.The former destroy cellulosic fibers,nylon,cellulose acetate.While the second destroy the protenic fibers[11].

1.1.2 THE CRIMPING

The criming printing a chemical paste, which causing shrink and pucker,imitating the qualities and effect of awoven and knite seersucker.[9] there are several important effects of crimp on Fabric Properties: abrasion Resistance: If crimp percentage

is high then the resistance of the fabric will be higher, shrinkage: If crimp percentage is high then the shrinkage of the fabric will be lower. Handle Properties: when the crimp percentage is higher, the softness of the fabric will be fiber. Simultaneously stiffness of the fabric will be lower, Fabric design: required extensibility is achieved by controlling crimp. [7, 9]

1.2 FASHION TRENDS

Fashion trends are the styling ideas that major collections have in common. They indicate the direction in which fashion is moving. Fashion forecasters look for the styles they think are prophetic, ideas that capture the mood of the times and signal a new fashion trend. Several designers may use a similar fashion idea because they have been inspired by common sources. The trend may appear in a fabrication, a silhouette, or another design element that appears in several collections. Very often, a new trend appears in small doses until it spreads to other collections. As the press notices similarities between collections and highlights them, the media exposure also helps establish the trends.

After Japan encountered such a powerful earthquake and Tsunami in March of 2011,one news channel broadeast the latest video footage,complete with fade in technique and doomsday type accompanying music .[10]

Only a tiny minority of us workwide actually encounter first hand such some form of disaster,could it be that it is becoming increasingly difficult for others to truly empathize,and understand the impact of these occurrences .are devastating events becoming normalized by their constant involve with the media.[11,12]

Disaster dramatics explores the concept of hype that is today created around disaster ,and the almost glamorous effect portrayed by the media disaster dramatics is accepting to the natural world which we may have learnt to hate and celebrates positive realism in the world prior to devastation ,glances of destruction,wear and corrosion will be communicated by this trend through use of fabric, colouring technique, and construction,with headlines sure to swirl in 2012/2013 over predictions of an impending Apoca lypse this is a such a highly prominent trend of Spring/Summer 2012/2013, that will earry you through to Autumn/Winter.[13,14]

Cracks in garments and crackling effects will be a key theme, with already existing crackle effect nail polish being the perfect subtlety, or finishing touch to an outfit.clothes that appear to have had a longer history than you are the ideal base with an eclectic mix of styles of period leather and denim.providing a narrative behind this trend , motifs reformed from nature, from the vines and plants that take over a damaged infrastructure to the elements of the earth. The essence of growth and development which is encouraged by disaster will be demonstrated through delicate reconstructions and manipulation of natural products.the palette for this trend is natural, sun drenched yet subdued, with play upon gradient. [15, 16, 17]

2 EXPERIMENTAL

Designed a group of sketches the final program to employ chemically processing materials adopted to benefit a certain amount of shape and decorative materials for woman clothing fashion to carry the aesthetic and functional values, and the simplicity of decorative techniques based on effects and chemical treatments for materials processing to research and special women's outer wear for a modern fashion design inspired by those processors and chemical effects and as adopted designs for women's outer wear searching on those materials chemically processing with mix them lines structural and decorative fashion trends of the modern Global trends of Fashion. It was accessed as follows:-

2.1 Choose the themes of fashion trends for women's outer wear, the most prominent and pervasive themes "I-Dent and Disaster Dramatics Mood Boards", shown figures (1, 2).

2.2 Look and Choose the silhouettes, materials, colors, decorative, and details for use in inspiration for the preparation of designs for women's outer wear's and special searching ,shown figures (3,4) to preparation of the proposed designs.

2.3 Select colors from Pantone pallet through the most prevalent raw materials in fashion trends of inspiration for clothe for women's outer wears for women's.

Fig. 1: Shows I-dent Mood board, Fashion elements as samples of textiles, colors, Details, Decorations, and Chemical Processors

Fig. 2: Shows disaster Dramatics Mood board Fashion elements as samples of textiles

Fig. 3: Shows Fashion elements and as samples of textiles, Decorations, and Details

Fig. 4: Shows samples of textiles, Decorations ,and Details

2.4 Specification of materials for this research and testing before the tribal chemically processed and then make chemical treatments and then testing a posteriori, and finally evaluate them from the point of view the arbitrator's gentlemen through the following

Steps:

2.1.1 FABRIC SPECIFICATIONS

Eight types of fabrics (polyamide and cotton –polyester - cotton and polyester- viscose and polyeaster - viscose , polyeaster and polyamide- silk and polyester – wool and poly acrylic- viscoce and polyester). The following table (1). Illustrates the tested fabrics specifications.

Table (1): Specification of Tested Fabrics

Fabric Number	Fiber Content	Weave Construction	Density	
			warp/inch	weft/inch
1	100% polyester	Plain	24	30
2	50% polyester, 50%cotton	Plain/twill	32	36
3	65 % cotton, 35% polyester	Plain/twill	33	36
4	40%silk , 60% polyester	Plain	22	29
5	100% polyester	Plain	24	30
6	85% wool ,15% acrylic	Knit Single jersey	wales 21	courses 24
7	60% viscose , 40% polyester	Plain	13	15
8	60% viscose , 40% polyester	Plain	13	15
9	50%viscose, 30%polyester, 20% nylon	Plain	32	37
10	50%viscose- 30%polyester- 20% nylon	Plain	32	37

2.1.2 THICKENING AGENT

Commercial Mypro GumNP-16(Meyhall), which is a non-ionic thickkenhng agent based on modified plant seeds gum was used at a concentration of 8%.

2.1.3 CHEMICALS

Show in table(2)

Table (2): Specification of chemicals used with Fabrics.

Suitable fiber combinations	chemicals	Concentration in the printing paste g/ kg.
Cotton/polyester	metacryzol	20
Cotton/nylon	Aluminium sulphate	25
Viscose/polyester	Acetic acid or sodium hydrogen sulphate	25
Viscose/polyester/nylon	metacryzol	30
Polyester/silk	Sulfuric acid	20
Wool/acrylic	Nitric acid	30
polyester	Acetic acid-sodium hydrogen	30

2.1.4 TECHNICAL PROCEDURES

2.1.4.1 PRETREATMENT

The fabrics were soaked for 30 minutes at 70^0C in a solution containing 15% of a cationic agent namely (Tanafix SR) adjusted at ph 7.at the end, the treated fabrics were subjected to washing using running water and finally air dried.

2.1.4.2 PRINTING

The fabrics were subjected to printing using printing paste contain effect agent, Mypro gum (8%) 500 g, water,urea and glycerine.

The printing paste was applied to the fabrics as per the flat screen printing technique.after printing the fabrics were subjected to complete drying before steaming .in all cases steaming was carried out at 120^0 C for 15 minutes.

2.1.4.3 WASHING OFF

The fixed printed samples were washed off as follows:

- Rinsing with running cold water.
- Soaping with warm at 60c using (3 gm/l Hostapal CV-ET) for 15 minutes.
- Rinsing with warm and running cold water.

2.1.5 MEASUREMENTS [18]

2.1.5.1 LOSS IN WEIGHT:

A.S.T.M.Standards .D1910-64(1970).

2.1.5.2 LOSS IN THICKNESS

ISO 5084

2.1.5.3 CREASE RECOVERY

A.S.T.M.D3937 (07.02)

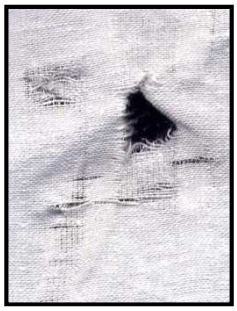
2.1.5.4 STIFFNESS

A.S.T.M.1388-96(2002)

2.2 EVALUATION THE MATERIALS TREATMENT

Evaluation materials processing and proposed research in from the aesthetic and functional purpose of which and shown on figure (5) order of display on the gentlemen the arbitrators of the professors in the field of each of the textile as **appendix this research no (1)** , textile printing and dyeing, finishing and the Department of Apparel and And specialists the Apparel industry to determine the best of those materials processing, and their suitability for women's clothing outer wear through the questionnaire and shown in the table (3), (4).

1-burn out the color in specific places



2- burn out the cotton in specific places

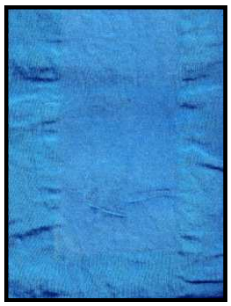
3- Crimp all the fabric.

4- Crimp all the fabric and burn out the nylon in specific places

5-burn out the color in specific places

6-burn out acrylic in specific places

7- burn out polyester in specific places



8-crimp in specific places

9- burn out polyester in specific places

10- Crimp all the fabric.

Fig. 5: the samples after treatment of this research designs used

Table (3): Evaluation form for the processing materials aesthetic

Items axes		Materials processing																								
		First					Second					Third					Fourth					fifth				
		Degree					Degree					Degree					Degree					Degree				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	Achieve processing chemical form aesthetically material proposed																									
2	The effect of chemical processing on the material																									
3	Appropriateness of chemotherapy used with material																									
4	Appropriateness of the processing effect to fashion trends																									
5	Appropriateness of the material processing for women's clothing																									
6	Free aesthetic appeal of the severity of the defects after processing																									
7	Change the form of material chemical processing used																									

Table (4): Evaluation form for the processing materials purpose of functional

Items axes		Materials processing																								
		First					Second					Third					Fourth					fifth				
		Degree					Degree					Degree					Degree					Degree				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	Affected by the properties of the material used for processing executed																									
2	The quality of the processing carried out on the material used																									
3	Affect the texture of material processing used																									
4	Affect the durability of the processing on the material used																									
5	The quality of the processing carried out on the material																									
6	Change the form of material chemical processing used																									
7	Affect processing on the color of the material used																									

2.2.1 THE PREPARATION OF THE PROPOSED DESIGNS

Preparation designs for women's outer wear inspired by global fashion trends and special Themes of natural disasters such as earthquakes, which lead to cracks and the effects of linear Earth-like effects of the contract and to link the output of the dyeing of fabrics in addition to the technology of chemicals that occur effects aesthetic, making the top fashion designers have focused on trends and which has been deployed in the world and use it aesthetic and decorative, and their clothes are designed so different styles of clothing on the basis of materials chemically processing "under the study" as shown on figures (6-15) The following:-

- **structural analysis of the design:-**

set for Women is composed of two pieces, namely:-

The first piece: - "Blouse" cutting curved the chest, and Sleeve a kimono cut at the Line elbow.
The second piece: - "Trousers" Takes the body shape long, and cut it down the horizontal line.

- Design lines: - Depends on the straight and curved lines to pronounce the aesthetics.
- A source of inspiration: - I-Dent Mood board.
- Decorative techniques to design: - Depends on the final shape to Material of chemically processed after change the color of material, circles the Material with Emergence of knitted stitches are clear after the melt acrylic by.
- Materials used: - Code 1 the first piece to material, and code 6 the second piece to material.
- Colors used of Pantone pallet: - Yellow 140756Tpx, Red 18-1763Tpx, blue18-3949Tpx.
- Chemical processing of materials: - burn out the color in specific places in the first piece of Material, burn out acrylic in specific places the second piece of Material.

Fig. (6) the first design

- structural analysis of the design:-

Set for Women is composed of two pieces, namely:-

The first piece: - "Corset" Strapless and aperture Neck a deep.
The second piece: - "Skirt" Descends Wide down and length up to knee line Slantwise.

- Design lines: - depended on the straight lines, curved, and slashes to pronounce the aesthetics.
- A source of inspiration: - Disaster Dramatics Mood board.
- Decorative techniques to design: - depends on the final shape to Material of chemically processed after "change the color of the raw material, Chopping / rupture in material".
- Materials used: - code 1 the first piece to material, and code 9 the second piece to material.
- **Colors used of Pantone palle**: - Yellow 140756Tpx, Red 18-1651Tpx, blue18-3949Tpx.
- Chemical processing of materials: - burn out the color in specific places in the first piece of Material, burn out polyester in specific places second piece of Material.

Fig. (7) the second design

- structural analysis of the design:-

Set for Women is consists is the dress.

The upper part of the dress: - Neck deep aperture -shaped "V" and without sleeves, and has a slanting cut starting from the bottom of the chest and ends near the end of the dress.
The lower part of the dress: - Descends wide down, and end top-line knee, the compound he layers of the Material.

- Design lines: - depended on the straight lines and slashes lines to pronounce the aesthetics of the Material processor.
- A source of inspiration: - I-Dent, and Disaster Dramatics Mood boards.
- Decorative techniques to design: - depends on the final shape to Material of chemically processed after to craship in the Material and riven by cutting.
- Materials used:- code 9 the upper part of the dress to material, and code7 the lower part of the dress to material
- Colors used of Pantone palle: - blue18-3949Tpx, Red 18-1651Tpx.
- Chemical processing of materials: burn out polyester in specific places the upper part of Material; - burn out polyester in specific places the lower part of Material.

Fig. (8) the third design

- Structural analysis of the design:-

Set for Women is consists is the dress.

The upper part of the dress: - "Corset" slot neck is circular in shape and deep, without sleeves, and Cut out a contiguous starting from the neck line and ends waist line.
The lower part of the dress: - Starts from the waist line Cut out slashes to install the materials parts in consecutive layers over each other different lengths and materials to be the lower part of the dress.

Design lines: - Depended on Straight lines, Hunched and slanted to - pronounce the effect of chemical processor on the materials used to design.
- A source of inspiration, I-Dent, and Disaster Dramatics Mood boards.
- Decorative techniques to design: - Depends on the final shape to Material of chemically processed after Chopping Material, and the presence of the registry along the Material.
- Materials used: - Code7 the upper part of the dress to material, and code 9 the lower part of the dress to material,
- Colors used of Pantone palle: - Red 18-1651Tpx, blue18-3949Tpx
- Chemical processing of materials: - burn out polyester in specific places the upper part of Material, burn out polyester in specific places lower part of Material.

Fig. (9) the fourth design

- Structural analysis of the design:-

Set for Women is consists is the dress

The upper part of the dress: -"Corset" Slot the neck of a circular shape and a very deep cut and inclination out riding and external layer and ends in length down the waist line, without sleeves and one-shoulder and Strapless.
The lower part of the dress: - "Skirt" showed a bottom line Cut out waist occasional install with four consecutive layers and different sizes on top of each other to be the lower part of the dress ends and top of the line knee length, and install wide belt over the waist down those cuts.

Straight lines and Hunched to - **Design line**s: - Depended on pronounce the effect of chemical processor on the design.
- **A source of inspiration: -** I-Dent, and Disaster Dramatics Mood boards.
- Decorative techniques to design: - Depends on the final shape to Material of chemically processed after "Cutting material and the presence of light a cloth".
- Materials used: - Code 1 the upper parts of the dress to material, and code2 the lower part of the dress to material. "
- Colors used of Pantone palle: - White 11- 0608Tpx/ Bell Flower 18-3628Tpx"."
- Chemical processing of materials: - burn out the color in specific places the upper part of Material, burn out the cotton in specific places lower part of Material.

Fig. (10) the fifth design

- Structural analysis of the design:-

Set Women are consists of two pieces,namely:-

The first piece: - "blouse" without sleeves, slot the neck of a deep circular shape, and ends down the waist line, and consists of two parts the first ends cut slashes down the line of the chest, and the second ends with the bottom line of the waist.
The second piece: - "skirt" descends wide down, the top of the line ending knee, It consists of several layers and overlapping slashes on top of each other.

Straight lines, slashes and hunched to - **Design lines**: - depended on pronounce the effect of chemical processor on the design.
- A source of inspiration: - I-Dent, and Disaster Dramatics Mood boards.
- Decorative techniques to design: - depends on the final shape to Material of chemically processed after "crease, wrinkled material, and the existence of the registry along the material
- Materials used: - code 6 the first piece to material, and code 8 the second piece to material.
- **Colors used of Pantone palle: -** black 19-0608/ white 11-0605/ blue 19-9353.
- Chemical processing of materials:- burn out acrylic in specific places the first piece of Material, burn out polyester in specific places the second piece of Material.

Fig. (11) the sixth design

- Structural analysis of the design:-

Set for Women consists of two pieces, namely:-

The first piece, "Jumper" slot the neck of a square shape, long and up to the end of the hip line, without sleeves, and cut slashes at the center line of the front, and close buttons.
The second piece, "Trousers" long descends wide down, Ends with at the line of foot.

. Straight lines, and slashes to - **Design lines**: - depended on pronounce the aesthetics of fabrics processing design.
- A source of inspiration: - I-Dent, and Disaster Dramatics Mood boards.
- Decorative techniques to design: - Depends on the final shape to Material of chemically processed after Crease, wrinkled material, and the existence of the registry along the material
- Materials used: - Code7 the first piece to material and code 9 the second piece to material.
- **Colors used of Pantone palle**: - Sweet Potato 18-1655Tpx/ blue18-3949Tpx.
- **Chemical Chemical processing of materials**: - burn out polyester in specific places the first piece of Material; crimp in specific places the second piece of Material.

Fig. (12) the seventh design

- Structural analysis of the design:-

Set for Women is consists is the dress.

The upper part of the dress: - slot the chest deep of a circular shape, and cradles, contains three layers slashes overlapping with each other.
The lower part of the dress: - cut down the waist line and installing them skirt external open from front center line and ends long before the knee line.

- Design lines: - depended on Straight lines, curved and slashes to pronounce the design aesthetics.
- A source of inspiration: - I-Dent, and Disaster Dramatics Mood boards.
- Decorative techniques to design: - Depends on the final shape to Material of chemically processed after "wrinkled material, and the presence of distortions direction warp of the material".
- Materials used: - Code8 the upper part of the dress to material, and code10 the lower part of the dress to material.
- **Colors used of Pantone palle**:- Sweet Potato 18-1655Tpx, Red 18-1763Tpx
- Chemical processing of materials: - crimp in specific places the upper part of Material; Crimp all the fabric the lower part of Material.

Fig. (13) the eighth design

- **Structural analysis of the design:-**

Set for Women consists of three parts, namely:-

The first piece: - "Jacket" with Collar is open from center line front, and ends a length when the hip line, and the sleeves up to the line of carpal.
The second piece: - "Top" slot the neck of a circular shape, without sleeves, and ends a length when the line the abdomen.
The third piece: - "Trousers" descends wide down, and decorated with ribbons ends with at the line of Line after the knee, and provider of a wide belt at the waist line.

- Design lines: - depended on Straight lines, and curved to pronounce the design aesthetics.
- **A source of inspiration**: - Disaster Dramatics Mood boards.
- Decorative techniques to design: - Depends on the final shape to Material of chemically processed after "tentic or chopping material and the presence of a length of material the Registry".
- Materials used: - Code2 the first piece to material and code 9 the second and third piece to material.
."White 11-0605Tpx, blue18-3949Tpx" **- Colors used of Pantone palle**:-
- Chemical processing of materials: - burn out the cotton in specific places the first piece of material; burn out polyester in specific places the second and third piece of Material.

Fig. (14) the ninth design

- Structural analysis of the design:-

Set for Women consists of two parts, namely:-

The first piece: - "Cardigan" slots the chest deep of a circular shape, without sleeves, and closes buttons at the center line of front, and a compound with two pockets.
The second piece: - "dress" slot the chest of a circular shape, without sleeves, descending to the bottom wide, ends the hip line of the knee, the provider belt at the buttocks,
Cut and has a diagonal length of the dress And ends its end opening.

- Design lines, depended on Straight lines, and curved to pronounce the design aesthetics.
- A source of inspiration: - Disaster Dramatics Mood boards.-
- Decorative techniques to design: - Depends on the final shape to Material of chemically processed after "Chopping and wrinkled or Crease of material"l.
- Materials used: - Code9 the first piece to material and code4 the second piece to material.
- Colors of Design pantone:-"black 19-0608/ white 11-0605/ blue 19-9353","blue18-3949Tpx.
- **Chemical processing of materials**: - burn out polyester in specific places the first piece of material, Crimp all the fabric and burn out the nylon in specific places the second piece of Material.

Fig. (15) the tenth design

2.2.2 EVALUATION THE DESIGNS

Evaluation of the proposed searching designs respectively to display according to the gentlemen of the arbitrators professors that specialize in the field of each of the Apparel designs, textile, textile printing, the dyeing and finishing industry in addition to the Staff in the field of clothing industry through a questionnaire specific to this search, "search tool", and the number (10) a variety of designs the styles own for clothes women's outer wear. Through the questionnaire proposed searching "search tool" The shown table (5). Evaluated by number 25 arbitrator professors industrialists. Some expressions was modified in favor of the questionnaire from their point of view and have agreed on the evaluation suitability of the designs by a percentage 80% .This consists of a number five- axes to measure the suitability of each axes for the designs of the proposed research.Where each axes consists of the number seven and phrases to be the final score of each phrase is five degrees So grades is calculated to know the total aggregate each design individually as follows.The number of arbitrators × degree each item axis (25 × 5) = 125 and bringing each item questionnaire = 125 .Degree one item questionnaire × number of items all axesquestionnaire (125 × 35) = 4375, a total degree or total aggregate each design alone. The gentlemen Ptqmimha arbitrators in accordance as **appendixes of this research no (1, 2)** with the following elements: -

1- The suitability of the proposed questionnaire for evaluation by a percentage 77.39%.
2- The logical sequence of items per axes inside questionnaire by a percentage 77.39%.
3- Suitability questionnaire axes of the proposed idea by a percentage 80.87%.
4- The clarity of the expressions used questionnaire items by a percentage 79.13%.
5- The clarity of the objectives of the axes of the questionnaire by a percentage 80.00%
6- The clarity of instructions the answer to questionnaire by a percentage 86.09%.
7- The extent of the coverage of the axes evaluation questionnaire by a percentage 79.13%.

Thus, evaluatedquestionnaire and is ready to achieve the objectiveof which the the survey and evaluation from which to select the best designs of the proposed research, with the highest ratings.

Table (5): Evaluation scale for Designs proposed form "questionnaire"

axes	Items		The proposed designs																								
			First					Second					Third					Fourth					fifth				
			Degree					Degree					Degree					Degree					Degree				
			1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
The first **design elements**	**1**	Harmony lines structural and decorative design of the proposed																									
	2	Lines correspond to the proposed design with materials processing																									
	3	Takes the form outside of the distinctive design																									
	4	Appropriateness lines haircuts internal design																									
	5	Design spaces highlight the appearance of diverse																									
	6	Linked to structural and decorative lines with each other																									
	7	Color consistency of the proposed design																									
The Second **Design Principles**	**1**	Realized the foundations of the design of the proposed design																									
	2	Emphasizes design lines on the aesthetic appeal of the severity of																									
	3	Highlights the material rhythm design																									
	4	Appropriateness and proportionality ratio of material materials used to design																									
	5	The proposed design achieved unity																									
	6	Suitable material materials used to design the proposed																									
	7	Equilibrium materials processing design proposed																									
The Third **Innovation and modernity**	**1**	Design achieves a kind of contemporary																									
	2	Lines are consistent with the structural design of the current global fashion trends.																									
	3	Achieve innovative design in the field of																									

		design women's clothing																								
	4	Appropriateness aesthetics of the severity of the outside form of the design																								
	5	Successful recruitment of material processing design proposed																								
	6	Add material processing distinctive design of the proposed																								
	7	Appropriateness of the proposed design for the processing of severe																								
<u>The Fourth</u> **Marketing Design**	**1**	Appropriateness of the proposed design for the production of																								
	2	The proposed design is suitable for marketing																								
	3	Design fits taste in the Egyptian market.																								
	4	Design helps innovation in helping to speed commercialization.																								
	5	Achieve aesthetically design helps to speed buy it.																								
	6	Achieve the functional design helps to speed buy it.																								
	7	The uniqueness of the design from other similar designs.																								
<u>The fifth</u> **suitable design**	**1**	Appropriateness of the proposed design for the classic daily wear for women's.																								
	2	Appropriateness of the proposed design for normal daily wear for women's																								
	3	Appropriateness of the proposed design for evening wear for women's																								
	4	Appropriateness of the proposed design for evening wear for women's																								
	5	Appropriateness of the proposed design of the clothes Foreign																								

		Women																								
	6	Fit the proposed design sportswear for women																								
	7	The proposed design fit the age group of 18-25 years																								

3 RESULTS AND DISCUSSION

3.1 RESULTS OF MATERIALS PROCESSING AND PROPOSED RESEARCH

Results of experimental examination on the produced samles are presented in the following tables and graphs.results was statically analyzed for data listed.

Table (6).the results of the thickness and weight applied to the samples Before /after treatment, produced in this research,this table shows effect of treatment on the loss of weight and thickness which results show in figure (16,17) . The percentage the loss was calculated according to equation in Technical procedures part.

Table (6): The thickness and weight applied to the samples before /after treatment and %the loss of weight and thickness.

The test Sample code	Weight (g/m^2)		The loss% weight	Thickness(m.m)		The loss% thickness
	Beforetreatment	after treatment		Beforetreatment	aftertreatment	
1	140	138	0.014	30.22	30	0.007
2	140	195	0.392	30.22	37	0.220
3	197	82	0.583	49	48	0.020
4	73	75	0.027	18.2	34	0.868
5	73	89	0.219	18.2	23	0.263
6	101	117	0.158	21.5	20	0.069
7	197	244	0.137	37.5	56	0.493
8	158	162	0.025	27	26	0.0370
9	79	66	0.164	24.5	20.3	0.171
10	112	56	0.5	92	61	0.337

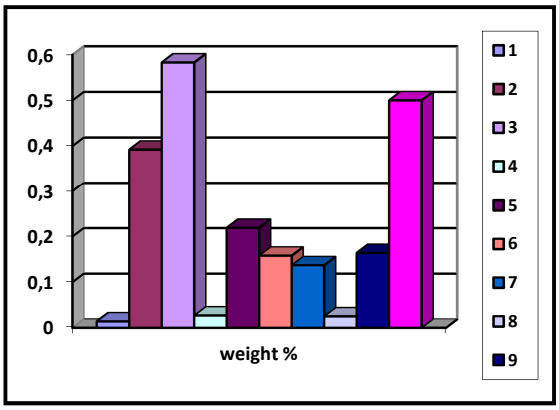


Fig. 16 Effect of treatment on the loss of weight

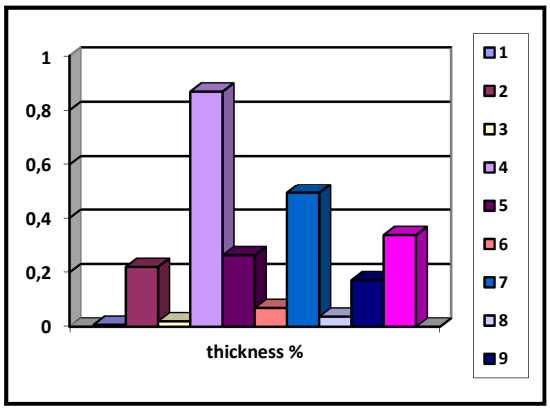


Fig. 17 Effect of treatment on the loss of thickness

THROUGH PREVIOUS TABLES AND FIGURES, IT WAS REACHED TO THE FOLLOWING RESULTS

The results obtained with respect to the percent %loss in weight and thickness are represented in figures (16,17),the percent loss depends on the nature of the blend ,the nature of the treatment on material,the concentration of the used material,and on the ratio of the components of the blend.

These results are expected since these salts as an acid and alkali which burn away cellulosic fabric which burn away protenic fabric,and this explains why the high percent of cellulose and proten in blend are the most affected one in the loss in weight and thickness.

In all cases, treatment with metacryzol, Aluminium sulphate, Acetic acid, sodium hydrogen sulphate, Sulfuric acid and Nitric acid cause a % loss in

Weight follows the order: 3> 10> 2> 5> 9> 6> 7>4>8>1. The treatment cause a % loss in thickness follows the order: 4>7>10>5> 2 > 9> 8>6>3>1**.**

Where used chemical metacryzol and Nitric acid burn out polyester cases the less loss in weight and thickness for the fabric: cotton/polyester, Viscose/polyester/nylon and polyester in specific places, leave the other fabric.

But used chemicals Aluminium sulphate, Sulfuric acid give crimp effect on the anther fabric, cases the great loss in thickness for the fabric: cotton/polyester, silk/polyester, viscose/polyester and Viscose/polyester/nylon.

Fabric polyester is the less loss in thickness and weight cause treatment by Acetic acid, sodium hydrogen sulphate burn out the color only without solve the fabric.

The cellulosic long chain turn into hydrocellulose of very short chainswhich can be removed on washing and viscose have free hydroxyl groups and amorphous regions greater than that of the cotton,so viscose fabric has a great % loss as wool and cotton,but synthetic fabrics like nylon and polyester have crystilline regions greater than that of the cotton and wool.

Table (7): The results of the crease recovery (warp and weft) and the stiffness before/after treatment, applied to the samples, produced in this research.

The test	Crease recovery( )^0				Stiffness (m.g/cm)	
	warp		weft			
Sample code	Before treatment	after treatment	Before treatment	After treatment	Before treatment	after treatment
1	82	89	83	76	0.84	0.40
2	82	97	83	69	0.84	0.58
3	70	87	90	90	0.97	0.59
4	70	116	73.5	79	0.22	0.24
5	72.5	68	73.5	131	0.22	0.27
6	69	108	91	97	0.35	0.42
7	77	105	92	179	1.16	1.17
8	53	172	69	107	0.36	0.49
9	138	106	124	94	0.19	0.14
10	89	91	90	89	0.25	0.81

Through previous table (7) and figure (18), it was reached to the following results, the notic, there are the different effects of treatments on the fabrics between decrease /increase for stiffness, where burn out the fabrics give decrease the result of stiffness by metacryzol and Nitric acid, while sodium hydrogen sulphate, Sulfuric acid and Nitric acid cause increase stiffness fabrics which give crimping effect.

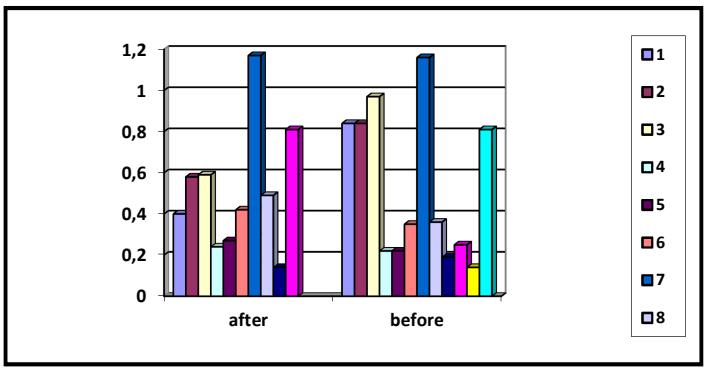


Fig. 18 Effect of treatment on the stiffness

In table 7 and figure (19,20), it was reached to the following results , there effects of treatment by chemical on the fabrics increase for crease recovery in warp, while treatment with, sodium hydrogen sulphate, Sulfuric acid and Nitric acid cause decrease crease recovery in weft: Polyester/silk- polyester- - Viscose/polyester- Viscose/polyester/nylon.

But treatment with metacryzol, Aluminium sulphate, sodium hydrogen sulphate cause increase crease recovery fabrics Polyester- Cotton/nylon- Viscose/polyester

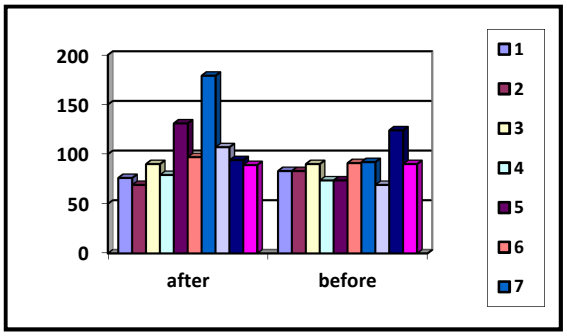


Fig. 19 Effect of treatment on crease recovery in weft

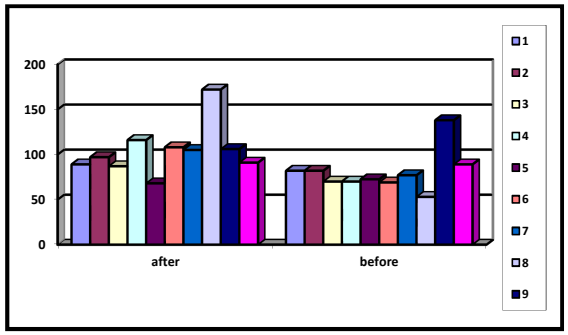


Fig. 20 Effect of treatment on crease recovery in warp

Table (8): Regression equation and correlation coefficient for the effect of before /after treatment on weight, thickness, stiffness and crease recovery in warp/waft.

Significance level	Wilcoxon Z	Significance level	Degrees of freedom "d f"	t-test	error Coefficient	Standard deviation	Average	Numbers	Variable
.759	.306	.673	9	0.436	.1496	.4730	1.270	10	Weight B.T
					.18276	.57794	1.2044	10	Weight A.T
.799	.255	.874	9	.163	7.00607	22.15514	34.8340	10	Thickness B.T
					4.690	14.830	35.53	10	Thickness A.T
1.000	.000	.756	9	.320	.11687	.36956	.5400	10	Stiffness B.T
					.0957	.3027	.511	10	Stiffness A.T
.057	1.988	.072	9	2.042	7.124	22.528	80.25	10	crease recoveryin warp B.T
					12.932	40.896	113.30	10	crease recoveryin warp A.T
.635	.474	.451	9	.787	4.886	15.450	86.90	10	crease recoveryin waft B.T
					5.504	17.407	92.90	10	crease recoveryin waft A.T

Where: B.T=before treatment, A.T= after treatment.

As for the item **weight** and calculates the value of the (T) TEST degrees between the treatment group (before\after) and found that the value of T (T TEST) The calculated = 0.44, and comparing the value of (T) The calculated which is equal to 0.44 Spreadsheet (T) warden which is to = 2.26 at the level of significance 0.05, and to = 3.25 at the level of significance 0.01 and when the degree of freedom 9, found that the value of v The calculated less than T. spreadsheet at level of significance 0.05 if there is no essential difference between the middle the two groups.

To confirm the test was used Wilcoxon (W) statistics Allabarmitry the value = 0.827 It means that there is no essential difference between the middle two groups, the same result the previous as shown table (8).

As for the item **thickness** and calculates the value of the (T) TEST degrees between the treatment group (before\after) and found that the value of T (T TEST) The calculated =0.16 and comparing the value of (T) The calculated which is equal to 0.16 Spreadsheet (T) warden which is to = 2.26 at the level of significance 0.05, and to = 3.25 at the level of significance 0.01 and when the degree of freedom 9, found that the value of v The calculated less than T. spreadsheet at level of significance 0.05 if there is no essential difference between the middle the two groups.

To confirm the test was used Wilcoxon (W) statistics Allabarmitry the value = 0.697 It means that there is no essential difference between the middle two groups, the same result the previous.

As for the item Stiffness and calculates the value of the (T) TEST degrees between the treatment group (before\after) and found that the value of T (T TEST) The calculated = 0.32, and comparing the value of (T) The calculated which is equal to 0.32 Spreadsheet (T) warden which is to = 2.26 at the level of significance 0.05, and to = 3.25 at the level of significance 0.01 and when the degree of freedom 9, found that the value of v The calculated less than T. spreadsheet at level of significance 0.05 if there is no essential difference between the middle the two groups.

To confirm the test was used Wilcoxon (W) statistics Allabarmitry the value = 0.614 It means that there is no essential difference between the middle two groups, the same result the previous.

As for the item **crease recovery in warp** and calculates the value of the (T) TEST degrees between the treatment group (before\after) and found that the value of T (T TEST) The calculated = 2.042, and comparing the value of (T) The calculated which is equal to 2.042 Spreadsheet (T) warden which is to = 2.26 at the level of significance 0.05, and to = 3.25 at the level of significance 0.01 and when the degree of freedom 9, found that the value of v The calculated less than T. spreadsheet at level of significance 0.05 if there is no essential difference between the middle the two groups.

To confirm the test was used Wilcoxon (W) statistics Allabarmitry the value = 3.517 It means that there is no essential difference between the middle two groups, the same result the previous.

As for the item **crease recovery in waft** and calculates the value of the (T) TEST degrees between the treatment group (before\after) and found that the value of T (T TEST) The calculated = 0.79, and comparing the value of (T) The calculated which is equal to 0.79 Spreadsheet (T) warden which is to = 2.26 at the level of significance 0.05, and to = 3.25 at the level of significance 0.01 and when the degree of freedom 9, found that the value of v The calculated less than T. spreadsheet at level of significance 0.05 if there is no essential difference between the middle the two groups.

To confirm the test was used Wilcoxon (W) statistics Allabarmitry the value = 3.096 It means that there is no essential difference between the middle two groups, the same result the previous.

In figures (21, 22) which show evaluation treatment fabric, produced in this research for aesthetic and functional goal.fabric number 10 (50%viscose/30%polyester/ 20% nylon) is the best, which treated by metacryzol.the effect of treatment on a fabric is crimp.

In figure (23), which show evaluation the designs . The design number 8 is the best, which consist of dress and skirt.the dress made from 60% viscose /40% polyester treated by Acetic acid; the effect of treatment on a fabric is crimp.

But the skirt made from 85% wool/15% acrylic treated by Nitric acid, the effect of treatment on a fabric is burn out the acrylic in specific places in the fabric. **The hypothesis authenticity is verified your Chemical treatments for fabrics.**

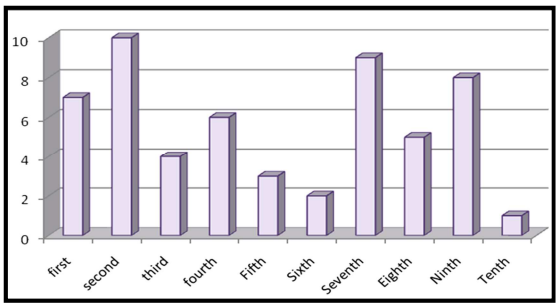


Fig.21: evaluation treatment fabric, produced in this research for aesthetic goal.

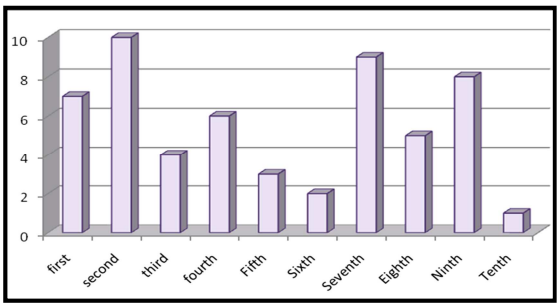


Fig.22: evaluation treatment fabric, produced in this research for

3.2 RESULTS OF DESIGNS PROPOSED RESEARCH

Results of experimental examination on the produced Designs are presented in the following tables and charts.results was statically analyzed for data listed.

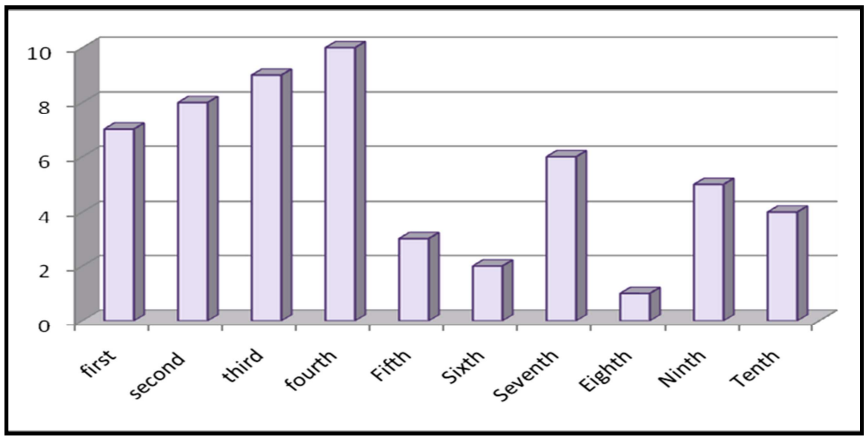


Fig 23: the evaluation the designs.

Shown in the figure (23) Arrangement designs proposed research and resident and according to the viewpoint gentlemen arbitrators have been designs with the highest grades are respectively eighth, sixth, fifth, tenth and ninth. And designs which depend on a certain amount of shape diversity woman clothing according to fashion themes inspired of which adopted as aesthetically or decorative designs on **the effect of chemicals on materials as follows**:- wrinkled material, and the presence of distortions direction warp of the material, cutting material and the presence of light a cloth, crease, the existence of the registry along the material, tentic or chopping material and the presence of a length of material the Registry, Chopping and wrinkled or Crease of material.**And Codes of materials used** (8,10,6,1,2,9,4).

With regard to with the designs on the lower grades, respectively, are the fourth, third, second, first, and seven. And adopted these designs on the diversity of form inspired a certain amount of themes adopted as global fashion decorative shape on **the effect chemicals on those materials used as follows**:- Crease, wrinkled material, and the existence of the registry along the material, Chopping Material, and the presence of the registry along the Material, craship in the Material and riven by cutting, change the color of the raw material, Chopping / rupture in material, circles the Material with Emergence of knitted stitches are clear after the melt acrylic by. **And Codes of materials used** (7, 9, 6, 1).

Table (9): correlation the axes for the questionnaire evaluation of the research design.

	First	Second	Third	Fourth	Fifth
First	1				
Second	.769**	1			
Third	.811**	.910**	1		
Fourth	.532	.860**	.767**	1	
Fifth	.628	.890**	.732*	.888**	1

Seen from the table (9) correlation between axes and questionnaire for the evaluation of the proposed research designs. A strong correlation at level of significance (.01) between each of the first axes and the second, first and third. When a strong correlation at level of significance (0.01) between each of the second and first, second and third, second and fourth, and when the average correlation between the second and fifth A strong correlation between each of the first and third axes, and the third and the second, third and fourth, and the average correlation at level of significance (0.05) between each of the third and fifth. When a strong correlation at level of significance (0.01) between each of the fourth axes and the second, fourth and third, fourth and fifth. When a strong correlation at level of significance (0.01) between each of the fifth axes and the second, fifth and fourth, and the average correlation at level of significance (0.05) between each of the third and fifth axes.

Therefore it is evident from the table that there is a link between the axes of the questionnaire arbitrator by the designs of the proposed research from the viewpoint of gentlemen professor's arbitrators and then it achieves its objective in the research.

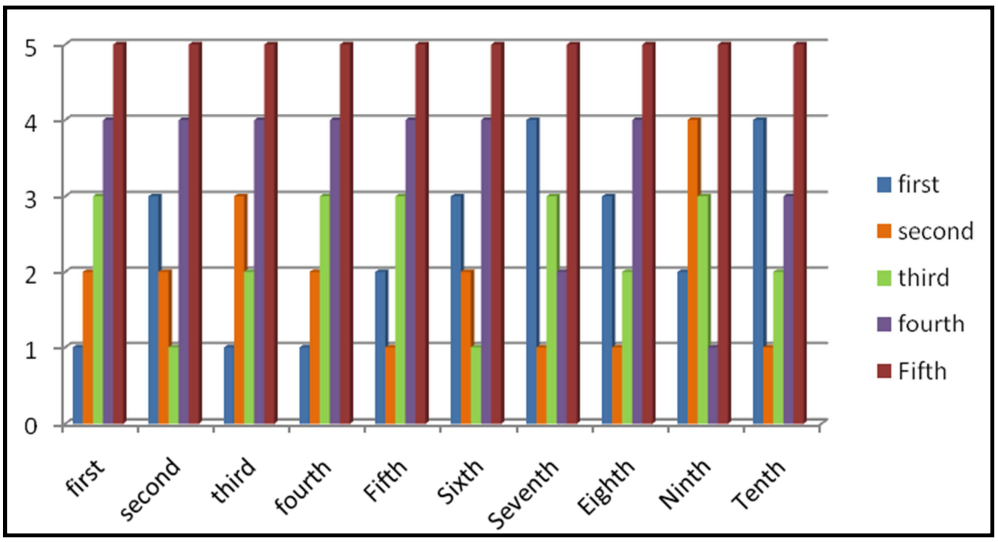


Fig. (24): Shows arrangement axes questionnaire for each design proposal separately

Table (10): Shows the final evaluation of the designs, and the Arrangement of axes for designs.

The proposed designs				Arrangement the axes of the evaluation questionnaire for proposed designs				
Design		The percentage%	Arrangement	Design elements	Design Principles	Creativity and modernity	Marketing design	suitability of the design
				degre				
				1	2	3	4	5
1	First	72.64%	Seventh	1	2	3	4	5
2	Second	71.04%	Eighth	3	2	1	4	5
3	Third	66.81%	Ninth	1	3	2	4	5
4	Fourth	66.35%	Tenth	1	2	3	4	5
5	Fifth	77.21%	Third	2	1	3	4	5
6	Sixth	77.55%	Second	3	2	1	4	5
7	Seventh	72.8%	Sixth	4	1	3	2	5
8	Eighth	78.01%	First	3	1	2	4	5
9	Ninth	73.78%	Fifth	2	4	3	1	5
10	Tenth	76 %	Fourth	4	1	2	3	5

Shown in the figure (24) and table (10) arrangement tha proposed designs, the percentage%, arrangement the axes of the evaluation questionnaire for proposed designs and of reacher. And evaluate them was as follows:-

1- Design 8:- Obtained an arrangement the second by a percentage 78.1%. And the best axes for the design of the respectively, is the axis fifth, fourth, third first, and second.

2- Design 6:- Obtained an arrangement the second by a percentage 77.55%. And the best axes for the design of the respectively, is the axis fifth fourth first second and third.

3- Design 5:- Obtained an arrangement the third by a percentage 77.21%. And it was the best themes for the design of the respectively, is the Axis fifth, third, fourth, first, and second.

4- Design 10:- Obtained an arrangement the fourth by a percentage76 %. And the best axes for the design of the respectively, in the order is the axis Fifth, first, fourth, third, second.

5- Design 9:- Obtained an arrangement the fifth by a percentage 73.78%. And the best axes for the design of the respectively, is the axis, Fifth, second, third, first, and fourth.

6- Design 7:- Obtained an arrangement the second by a percentage 77.8%. And the best axes for the design of the respectively, is the axis, fifth, first, third, fourth, and second.

7- Design 1:- Obtained an arrangement the seventh by a percentage 72.64%. And the best axes for the design of the respectively, is the axis, fifth, fourth, third, second and first.

8- Design 2:- Obtained an arrangement the eight by a percentage74.04%. And the best themes for the design of the respectively, is the axis fifth, fourth, first, second, and third.

9- Design 3:- Obtained an arrangement the Ninth by a percentage81.66%. Ana the best themes for the design of the respectively, is the axis second, third, fourth, fifth, and the first.

10- Design 4:- Obtained an arrangement the tenth by a percentage 66.35%. And the best themes for the design of the respectively, is the axis fifth, fourth, third, second, and first.

There are significant differences between the scores of the proposed designs of the women's outer wears and arrangement the axes of the evaluation questionnaire according to the views of gentlemen of the arbitrators. The highest questionnaire axes respectively fifth axis is the fourth third, second and finally first. This means that the research designs the most they agreed with the fifth axis and your suitability for the clothing designs of State for Women and the most widespread and classic, a daily and evening and evening and the age group of 18-25 years, followed by the fourth axis and the possibility of private production and marketing of these designs have been proposed to search the arbitrators agreed with this axis on the possibility of its production and marketing because of the aesthetic effect of chemicals on the proposed

designs diverse materials as these are limited to Iiothirat varied little from raw materials such as jeans, Followed by the third axis and private Creativity and modernity of the designs of the proposed research it was agreed by the gentlemen of arbitrators for a large number of designs that out Creativity in terms of the diversity of ideas and model design clothes for women diversified and places of employment of materials and distribution of chemically processing to confirm the philosophy of their own design making use of natural disasters such as earthquakes occurring cracks and the effects of sin and what looks like a variety of wrinkled and cut fabrics, these lamentations or aesthetic values may be found in the specific materials including cloth Jeez, and highlight the impact of materials processing by aesthetic design in addition to the use of other materials with use as reinforcement or lining them to make the old consumer, like other materials untreated and this confirmed by functional tests of raw materials after processing the differences between the before / after differences are very simple. Followed by the first and second axis, respectively, and are the the basis design, design elements and assured Gentlemen arbitrators as the availability of design elements with a large number of designs for the foundations of the design which is suitable raw material used for the design, highlighted the raw design lines and details, colors and spaces. Which confirmed that it can take advantage of chemical treatments for fabrics ladies of the aesthetics in the field of fashion design. **The hypothesis authenticity is verified your proposed designs.**

4 CONCLUSION

- Treatment with metacryzol, Aluminium sulphate, Acetic acid, sodium hydrogen sulphate, Sulfuric acid and Nitric acid cause a % loss in weight and thickness
- There are the different effects of treatments on the fabrics between decrease /increase for crease recovery and stiffness.
- Treatment with metacryzol, Aluminium sulphate, sodium hydrogen sulphate, and Nitric acid cause burn out,but Acetic acid and Sulfuric acid cause crimp on the fabric.
- Fabric number 10 (50%viscose/30%polyester/ 20% nylon) is the best, which treated by metacryzol.
- The design number 8 is the best made from 60% viscose /40% polyester and 85% wool/15% acrylic treated by Acetic acid and Nitric acid, the effect of treatment on a fabric is crimp and burn out.
- The work has demonstrated the possibility of creating fashion design trends based on the the effects by treatment.

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Helwan University

Faculty of Applied Arts

Department of Apparel Design & Technology

Research appendixes

Dear

Pro. Dr.\.....

Researchers\

Ass.Pro / Ghada Abdullah El. Elkholy, Department of Apparel Design & Technology - Faculty of Applied Arts - Helwan University

Dr / Shereen Saied Mohammed Hassan, Department of Apparel Design & Technology -Faculty of Applied Arts- Helwan University, is studying entitled:

Possibility of benefiting from the impact of chemical treatments for fabrics in fashion design

The researcher has prepared this form for collecting data that helps on completing the applied side of her scientific research. You are kindly required to read this form and express your point of view through putting before the appropriate level from your point of view, with taking into account that No. (5) Is the highest level and No. (1) Is the lowest level. The researcher extends to you her deepest thanks and appreciation for your highly appreciated cooperation in completing the scientific research.

Thank for your best cooperation

Researchers

APPENDIX: (1): EVALUATION QUESTIONNAIRE

Elements of evaluation		Degree				
		1	2	3	4	5
1	The validity of the proposed questionnaire for the calendar					
2	The logical sequence of items per axis within the questionnaire					
3	Suitability questionnaire axes of the proposed idea					
4	The clarity of the expressions used questionnaire items					
5	The clarity of the objectives of the axes of the questionnaire					
6	The clarity of the instructions to answer the questionnaire					
7	The extent of the coverage-resolution					

APPENDIX (2) THE NAMES AND PROFESSIONS OF THE ARBITRATORS GENTLEMEN DOMAIN OF ACADEMICS AND INDUSTRY SPECIALISTS

Name		Profession	Materials	Designs
1	Pro. DR Ahmed Hosny	:-Professor in Clothing Technology at Apparel Design & Technology Department- Faculty of Applied Arts- Helwan University.	✓	✓
2	Pro. DR Nermin Abdel Basset	: - professor in Fashion Design at Department of Clothing and Textiles - Faculty of Home Economics Helwan University.	✓	✓
3	Pro. DR Sharif Hassan	: - Assistant professor in Department of textile printing and dyeing and finishing- Faculty of Applied Arts- Helwan University.	✓	✓
4	Pro. DR Dalia Fekry	:-Assistant professor in Department of textile printing and dyeing and finishing- Faculty of Applied Arts- Helwan University.	✓	✓
5	Ass. Pro Emad sayed gohr	: - Assistant professor in Department of Apparel Design & Technology - Faculty of Applied Arts- Helwan University.	✓	✓
6	Ass. Pro. Rania Mostafa Kamel	: - Assistant professor in Department of Clothing and Textiles Department - Faculty of Home Economics Helwan University.	✓	✓
7	Ass. Pro. Nahla Abdel-Mohsen	:-Assistant professor in Department of Textile- Faculty of Applied Arts- Helwan University.	✓	✓
8	Ass. Pro. Bahirh Gabr Gebali	:-Assistant professor in Department of Apparel Design & Technology - Faculty of Applied Arts- Helwan University.	✓	✓
9	Ass. Pro. Manal Saif	:-Assistant professor in Department of Apparel Design & Technology - Faculty of Applied Arts- Helwan University.	-	✓
10	Ass. Pro. Nasrin Nasr	:-Assistant professor in Department of Apparel Design & Technology - Faculty of Applied Arts- Helwan University.	-	✓
11	Dr. Shahira Mahmoud Hefny	: - Lecturer - Department of Apparel Design & Technology - Faculty of Applied Arts- Helwan University.	✓	✓
12	Dr.Ghada Abdel-Salam Barakat	: - Lecturer - Department of Apparel Design & Technology - Faculty of Applied Arts- Helwan University.	-	✓
13	Dr. Wafa Abdel Rady Qureshi	: - Lecturer - Department of Apparel Design & Technology - Faculty of Applied Arts- Helwan University.	✓	✓
14	Dr. Mohamed Mahmoud Afifi	: - Lecturer - Department of textile printing and dyeing and finishing- Faculty of Applied Arts- Helwan University.	✓	✓
15	Dr. Mona Abu Taleb	: - Lecturer - of Department of Textile- Faculty of Applied Arts- Helwan University.	✓	✓
16	Dr. Wdiane Talaat	: - Lecturer - Faculty Department of Apparel Design & Technology - Faculty of Applied Arts- Helwan University.	✓	✓
17	Iman Adel Abdel Samie	National Research Centre, Department of Research and knitted garment industry	✓	✓
18	Sheri Abdul Latif Ashour	National Research Centre, Department of Research and knitted garment industry	✓	✓
19	Iman Zaher	Teaching Assistant of Department of Textile- Faculty of Applied Arts- Helwan University.	✓	✓
20	Marwa Mustafa	Teaching Assistant of Department of Textile- Faculty of Applied Arts- Helwan University.	✓	✓
21	Ghada Abdel-Mohsen	PhD, Doctoral student of Department of Textile- Faculty of Applied Arts- Helwan University.	✓	✓
22	Amr Mohamed Abdullah	Manager grille of international Company Clover Brooke for textiles and dyeing for clothing	✓	✓
23	Wissam Metwally Barakat	Sports wear Accent Manager Company Clover Brooke for textiles and dyeing	✓	✓
24	Sarah Beltagy	Engineer of Company Clover Brooke for textiles and dyeing for clothing	✓	✓
25	Mina Edouard	Engineer of Company Clover Brooke for textiles and dyeing for clothing	✓	✓