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Update 2012

Development of antiviral and virucidal clothing

Two cloths have been developed by Chemviron Carbon Cloth Division (Zorflex VB and Zorflex VB Plus) Which are having following characteristics:

- Antiviral
- Virucidal
- Antibacterial
- Bactericidal
- Non invasive

These were tested by the Health Protection Agency (HPA), UK using the MS2-Coliphage surrogate test virus. Test results found that a combination of materials including Zorflex VB, captured up to 99.54% of a virus. Once captured, the Zorflex VB active layer kills 93% of the virus. With Zorflex VB Plus the capture rate increased to 99.88% within the combination of materials and a 98% virus kill rate within the active layer. Cloths are available in knitted and woven forms.

Applications of the Zorflex VB and Zorflex VB Plus cloths range from:

- Respiratory masks and other forms of personal protective equipment (PPE)
- Medical gowns, wound dressings, patient clothing and bedding in the medical field
- Industrial applications such as air conditioning systems.

(For further details refer www.technical-textiles.net, calgoncarbon.com and Technical Textiles International May/June 2011)

BACK

Development of Non-flammable fabrics

Chapman Innovations, USA has developed range of non flammable fabrics called CarbonX. These fabrics offer the best level of fire and heat protection in flame-resistant clothing for the most extreme conditions. Based on patented blends of oxidized fibers, CarbonX is the only fabric able to withstand the direct flame of a blow torch without melting, igniting, or burning-even when exposed to the flame for up to 20 times longer than the competition.

CarbonX flame-resistant fabrics also retain this level of persistence and protection against molten metal and arc flash, leaving it as the only choice for professionals working in condition where safety matters most. These non-flammable fabrics can be found in flame-resistant clothing for industrial, fire, motor sports, and tactical industries, although its uses in safety are endless.

It is available in knits, wovens and non-wovens forms. These also combine comfort with an extreme level of protection. They are light weight, flexible and odour resistant. They breathe well, wick away moisture and dry quickly, enhancing the wearer's comfort and productivity.

(For further details refer www.carbonX.com and Technical Textiles International May/June 2011)

BACK

KEVLAR HIGH TEMPERATURE GLOVES

Kevlar® para-aramid based fabric is a remarkable fibre that provides strength to protect under extreme conditions. These Kevlar® gloves are substitute for asbestos gloves and most suitable for handling high temperature items. Kevlar® gloves provide excellent hand protection without sacrificing manual dexterity or comfort and offering exceptional resistance to cut, slash and heat. Gloves made of Kevlar® fabric do not burn and will not melt and is most suitable substitute of asbestos gloves. Kevlar® gloves are most suitable against open flame and hot metal splashes and can withstand temperature upto 350°C and with heavy woolen insulation upto 550°C.

(Source: www.taralohia.com)

BACK

CHEMICAL PROTECTIVE CLOTHING

- The main application of Chemical Protective Clothing (CPC) is to protect the user from chemical and physical hazards.
- The chemicals get absorbed into the human body by two ways:
- Physical contact: The chemicals gets absorbed through the skin
- Inhalation: The chemicals in gaseous state get absorbed in to the body through breathing.
- Chemical protective clothing is used for protection of the whole body against toxic chemicals which manifest their effect by absorption through skin.

Product classifications

- The CPC suits can be classified into two categories:

A. Durable:

- The durable Chemical protective clothing is made of non-permeable textile fabrics (PVC/Rubber coated fabrics).
- The resistance from chemical is attained by jamming the penetration and permeation of the chemicals through the fabrics in the clothing.
- This is a valuable technique for offering enough guard to professionals from get in touch with of deadly chemicals.
- These fabrics do not allow air or moisture permeability which leads to stress and drop in productivity.

B. Disposable:

- The disposable CPC is made of non woven fabric and can be used for 3-4 times.
- The disposable CPC provide better air and moisture permeability.
- Permeable type of clothing is preferred over impermeable type due to low heat stress and comfort, enabling use for a longer duration.

- The carbon-containing material developed so far includes carbon-coated non-woven fabric, carbon-impregnated polyurethane foam, hard carbon microsphere-adhered woven fabric and activated charcoal cloth.

Raw materials

- The durable Chemical protective clothing is made of non-permeable textile fabrics for e.g. PVC/Rubber coated fabrics.
- The disposable chemical protective clothing is made of carbon coated nonwoven fabric.

Technology used

- Weaving
- Coating
- Nonwovens

(Source: www.technicaltextile.net)

BACK

CBRN (chemical, biological, radiological, and nuclear) protective clothing and accessories

CBRN (pronounced C-BORN or C-BURN) is an initialism for chemical, biological, radiological, and nuclear. It is used to refer to situations in which any of these four hazards have presented themselves. The term CBRN is a replacement for the cold war term NBC (nuclear, biological, and chemical), which had replaced the term ABC (atomic, biological, and chemical) that was used in the fifties. The addition of the R (for radiological) is a consequence of the "new" threat of a radiological weapon (also known as "dirty bombs"). Since the start of the new millennium, a new term – CBRNe – was introduced as a replacement term for CBRN. These in this term represents the enhanced (improvised) explosives threat.

OUVRY is a Company, based in Lyon - France, which specialises in the study, research, development and manufacturing of CBRN (Chemical, Biological, Radiological & Nuclear) personal protective equipment (PPE) and related concepts. OUVRY can offer concepts across the full spectrum of CBRN protection: ranging from impermeable solutions (utilising impermeable or semi-permeable barrier materials and technologies) through to wholly air permeable solutions (utilising textile based activated (...). Products of OUVRY for CBRN use are briefed here:

CBRN Lightweight intervention coverall: Polyprotect 6

The multipurpose CBRN coverall is based on a new light permeable technology incorporating activated carbon spheres. The brand new coverall is very easy and fast to don. It protects against a large range of threats: more than 6 hours in CBRN contaminated atmosphere, splash, tear.

CBRN masks

Most of our CBRN protective clothing are made with an attached hood which is specially designed to adapt to most of mask types, both civilian and military. POLYPROTECT 6 overall was designed and tested according to the EN 13982-1 with several gas masks from Matisec, Fenzy, Draegger, MSA, Avon and ARPHA (NBC SYS).

CBRNe and ballistics

OUVRY SAS can provide innovative solutions for CBRN and ballistic protective equipment allowing : A very strong backface signature reduction (trauma), A decrease of mass, An increased body coverage, A personal ventilated system : Two ballistic protection levels.

CBRN protection overboots

Dedicated to First Responders and compliant with NATO standards, overboots protect against all chemical warfare agents more than 24 hours. They are worn over regular footwear and their design make these quick and easy to don and doff. The overboot is composed of only one part - manufacturing process : Injection molding - , which offers to the user a high level of protection and comfort.

CBRN protection butyl gloves "0,6mm" model

OUVRY CBRN protective butyl gloves protect against all chemical warfare agents and broad spectrum of industrial chemical toxics. Their ergonomic design make these easy and fast to don and doff. The thin material allows a high level of tactility and dexterity. The long cuff assures proper interface management with the CBRN protective suits.

CBRN Combat Clothing

CBRN combat clothing protects against a large range of liquids, vapor and aerosol risks more than 24 hours in CBRN contaminated atmosphere thanks to oil & water repellent treated outershell fabric (liquids) and to SARATOGA® filter material (vapors). Filtering materials choice & ergonomic design permits to worn CBRN battle dress uniform instead of standard combat clothing.

CBRN protection coverall - flame retardant model

CBRN permanent wear time protection coverall should be worn over standard suit or directly on skin. Thanks to high level of air permeability and to SARATOGA® filter fabric characteristics, this coverall protects more than 24 hours against all chemical warfare agents. It improves user physiological tolerance. Its outershell fabric limits flame propagation.

CBRN Air permeable undergarments

CBRN air permeable undergarment protects against all chemical warfare vapor agents more than 24 hours in contaminated atmosphere. The CBRN coverall is easy to don. The CBRN undergarment is made out of SARATOGA® filter fabric, air and water vapour permeable, which offers an optimal protection, fit and comfort.

CBRN Air permeable hood

Permeable CBRN hood protects against all chemical warfare agents more than 24 hours in contaminated atmosphere. Hood is manufactured with SARATOGA® filter fabric, air and water vapour permeable, which offers an optimal fit and comfort. The CBRN hood is dedicated to pilot staff, EOD specialists and firefighters.

CBRN Air permeable gloves - "combat" model

Permeable CBRN protection combat gloves protect from hand to forearm against all chemical warfare agents, flame and external aggressions. These permeable gloves are manufactured with leather, high resistance level outer shell and SARATOGA® filter fabric. They are fast to don and comfortable.

CBRN Air permeable socks

Permeable CBRN socks protect against all chemical warfare vapor agents more than 24 hours in contaminated atmosphere. They are manufactured with SARATOGA® filter fabric, air and water vapour permeable, which offers an optimal fit and comfort. Socks are worn with intervention shoes, and offer an excellent mobility and an optimum comfort to the user.

CBRN Air permeable gloves - "pilot" model

CBRN Air permeable pilot gloves protect against all chemical warfare vapour agents more than 24 hours in contaminated atmosphere. They consist of a flame retardant and heat protective leather outer shell associated with a brand new filter fabric, very thin, flexible and air permeable. The glove design provides a high tactility and allows an optimum operational suitability.

CBRN integrated combat boot

Reduce the operational capacities loss in CBRN conditions Thanks to its experts in CBRN and the company Blücher GmbH, worldwide leader in CBRN protection, the company launches a CBRN integrated combat boot : the STEP boot. This new concept can replace the use of a butyl overboot. The overboots create a severe burden due to the overweight at the foot and limit strongly the evacuation of the sweat. After a two years development and many trials, the product is ready.

(For further details refer en.wikipedia.org and www.ouvry.com)

BACK

Types of protective textiles

Personnel protection garments made from Nomex® and Kevlar® by Dupont, are most demanding garments in industry today. The following garments offer protection against hazards like heat, flame and chemicals. These garments are manufactured under strict international quality standards.

Protective Textiles includes:

- Fire Fighting Suits
- Industrial Cover Alls
- Industrial Heavy Duty Work Cover Alls
- Lab Coats
- Bomber Jackets
- Gloves
- Hoods / A Fire Man Balaclava
- Protective Under Garments
- Socks
- Fire Blanket
- Welding Curtain

Fire fighting suits

Fire fighting is a technical and life challenging service to the society. This service provides rescue and safety to public. Fire fighters always undergo disastrous and hazardous environment and always rely on their Personnel Protection Equipment (PPE) including protective garments. These garments provide protection against fire, flame and heat.

Industrial Cover-all

Industrial Cover-all is made from Nomex® piece dyed woven fabric. These cover-all are stitched with Nomex® threads.

Industrial Heavy Duty Work Cover Alls

Heavy Duty Cover-all are made from Kevlar® with cotton piece dyed fabric. These cover-all are stitched with Kevlar® threads, that ensures comfort and ease.

Lab Coats

Laboratory Coats are usually made from Nomex® weaved piece dyed fabric. The Lab Coats are stitched with Nomex® threads.

Bomber Jackets

Bomber Jackets are usually made from Nomex® weaved piece dyed fabric. These Jackets are stitched with Nomex® threads.

Gloves

a. Welding Gloves/Welding Gloves with Kevlar Wrist

These gloves protects from heat, flame and static energy. They provide comfort and flexibility. Easy to wear and breathable. The gloves are stitched with Nomex® III-A and Kevlar sewing threads.

b. High Flame Retardant Gloves / Car racing Gloves

The gloves protects from heat, flame and static energy. They provide comfort and flexibility. Easy to wear and breathable. The gloves are made from Nomex® III-A knitted fabric. The gloves are stitched with Nomex® III-A and Kevlar® sewing threads. Fabric used is Nomex® III-A knitted fabric and it will not carry on flame nor decomposes up to 427OC. Special type of leather in natural white and dyed colors with anti-skin allergy treatment is used on the upper part of the gloves.

c. Fire Man Gloves

The gloves are cuts, slashes and abrasions resistant. They are heat resistant up to certain level. They provide comfort and flexibility.

d. Kevlar® String Knit Seamless Gloves

- These 100% Kevlar® string knit made gloves are cut, slash and heat resistant.
- The gloves are very comfortable, flexible, washable and breathable.
- These gloves are made from Kevlar® and stitched with Kevlar® sewing threads.

e. Kevlar® String Knit Seamless Gloves with Polka Dots

- These 100% Kevlar® made gloves with polka dots on one side of gloves provide protection from sharp edges of metals, ceramics and glass.
- Polka dots provide extra grip on dry surfaces.
- The gloves are very comfortable, flexible, washable and breathable.
- These gloves are made from Kevlar® and stitched with Kevlar® sewing threads.

f. Kevlar® String Knit Seamless Gloves with Nitrile Foam Coated

- The gloves have got premium quality.
- They have better grip in light oil applications.
- Nitrile foam coating make these gloves better cut resistant than ordinary Kevlar® gloves.
- Non-porous Nitrile coating directs the oil away from the surface for better grip.
- They provide superior flexibility, puncture, and abrasions resistancy.
- These gloves are made from Kevlar® and stitched with Kevlar® sewing threads.

g. Kevlar String Knit Gloves with/without Long Wrist

- This type of glove can be worn on either hand. These gloves protect hands from sharp edges of metals, ceramics and glass.
- Extra protection is provided due to long wrist. They are comfortable, breathable, washable and flexible.
- These gloves are made from Kevlar® and stitched with Kevlar® sewing threads.

h. Police Safety Gloves with/without Long Wrist

The gloves are comfortable, sweat absorbent and easy to wear. Extra long wrist with elastic will give more grip. Protects from knife cuts, abrasion and slashes. The Gloves features are

- Outer part is made from Anti-Allergy and water resistant natural Leather.
- The Inner lining of the gloves is made from blended mixture (50/50) of Kevlar® and Cotton knitted napped fleece fabric.

i. Police Light Duty Gloves

The gloves are comfortable. Easy to wear and moveable. Cotton elastic wrist is used for extra grip with specially designed thumbs. This type of gloves is made from 40% anti-allergy and water-resistant leather and 60% Kevlar® knitted dyed fabric.

j. Biker Police Safety Gloves

Palm and backside of the glove is made from Natural leather and 100% piece dyed Kevlar®.

k. Lady Police Safety Gloves

These gloves are comfortable. Easy to wear with Elastic Wrist. With Velcro closure. Palm side of this glove is made from analyne leather. Backside is made from foam with fabric. Inner side is 100% Kevlar® lining.

l. Police Safety Gloves

This type of glove is made from 70% analyne and30% piece dyed Kevlar® fabric. Comfortable and easy to wear due to Kevlar® fabric. Movement of fingers is easy.

Hoods / A Fire Man Balaclava

- These hoods protects personnel form fire and heat.
- The hoods are breathable, very easy to wear and comfortable.
- These hoods are made as per strict international standards.

Protective Under Garments

Protective Under Garments are made from Nomex® knitted piece dyed or package dyed fabric. It consists of two parts, shirt and pajama. Under garments are stitched with Nomex® or Kevlar®threads.

Socks

Socks are usually made from Nomex® Knitting yarn. Socks provide more comfort and flexibility.

Fire blanket

It is an ideal and effective protective blanket used to wrap the objects and block the fire spreading. Fire blanket is fire resistant and smaller fires can be put out with a fire blanket quicker than using a fire extinguisher. Fire blanket is thick enough to resist high temperature, up to 550oC.

Welding curtain

A welding curtain/screen is a heat resistant fabric designed to be placed in the vicinity of welding area. Intended for use in horizontal applications with light to moderate exposures resulting from chipping, grinding, heat treating, sand blasting and light horizontal welding. It is designed to protect machinery and prevent the ignition of combustibles items located adjacent to underside of the blanket.

(Source:- www.technicaltextiles.biz)

BACK

Smart suit to improve physical endurance for soldiers

Wyss Institute for Biologically Inspired Engineering, Harward University, USA is in the process of developing "Smart suit" which will help to improve physical endurance for the soldiers.

The new smart suit will have features to overcome the problems typically associated with existing suits. Existing suits have rigid overall structures which restrict normal movement and are uncomfortable. These are light weight, efficient and nonrestrictive and will be made from soft wearable assistive devices. These suits will contain stretchable sensor that would monitor the body's biomechanics without the need for the typical rigid components that often interfere with the motion.

These suits would potentially delay the onset of fatigue which will enable soldiers to walk longer distances. These will also improve the body's resistance to injuries while carrying heavy loads.

Not only soldiers, this technology of soft wearables, will also help elderly people and disabled people in their mobility.

(For further details refer "Technical Textile News – fibre 2 fashion September 2012)

BACK

Waterproof & Breathable Fabrics

Everybody wants to stay warm and dry while playing in the snow. This can only be possible with waterproof/breathable fabric. For this one has to wear waterproof/breathable garments while enjoying ski or snowboard.

How to rate waterproofing of fabric?

It is in millimeters (mm) and is a measure of how waterproof a fabric is. In the case of a 10k or 10,000 mm fabric, if one puts a square tube with inner dimensions of 1" x 1" over a piece of said fabric, one could fill it with water to a height of 10,000 mm (32.8 feet) before water would begin to leak through. The higher the number, the more waterproof the fabric. Some manufacturers have developed their own testing methods that involve adding pressure to the process to simulate the effects of wind. Example is shown here:

Waterproof Rating (mm)	**Resistance provided**	**What it can withstand**
0-5,000 mm	No resistance to some resistance to moisture	Light rain, dry snow, no pressure
6,000-10,000 mm	Rainproof and waterproof under light pressure	Light rain, average snow, light pressure
11,000-15,000 mm	Rainproof and waterproof except under high pressure	Moderate rain, average snow, light pressure
16,000-20,000 mm	Rainproof and waterproof under high pressure	Heavy rain, wet snow, some pressure
20,000 mm+	Rainproof and waterproof under very high pressure	Heavy rain, wet snow, high pressure

How to rate breathability of fabric?

It is normally expressed in terms of how many grams (g) of water vapor can pass through a square meter (m2) of the fabric from the inside to the outside in a 24 hour period. In the case of a 20k (20,000 g) fabric, this would be 20,000 grams. The larger the number, the more breathable the fabric. .

Can outerwear be completely waterproof?

A raincoat made of rubber is completely waterproof, and may be the ideal wear for standing in a rain waiting for the bus. However if anyone tries to ski or snowboard in it, he'd be wet in no time from his own perspiration. The trick is to balance protection from rain and snow on the outside with the ability to let water vapor (warm perspiration) escape from the inside.

The truth is that all outerwear designed for active winter sports has various degrees of water resistance, but will eventually leak given enough water, time and pressure.

How Waterproof/breathable fabrics are made?

Waterproof/breathable fabrics consist of an outer layer called the "face fabric", usually made of nylon or polyester, and a laminated membrane or coating, usually made of ePTFE (expanded Polytetrafluoroethylene, also known as Teflon®) or PU (Polyurethane). The purpose of the face fabric is to protect and look stylish; it's not waterproof but is treated with a solution called DWR (Durable Water Repellent) so it doesn't soak up water.

The job of keeping the water out is left to the membrane, which has tiny holes too small to let liquid water enter but large enough to allow water vapor to escape. Since contamination with oil, sweat and many chemicals causes PTFE membranes to lose their ability to keep out water, the membrane is protected by an ultra-thin layer of Polyurethane (GORE-TEX® membranes have a bi-component laminate structure) or other oleophobic (oil-hating) treatment (eVent™ does this at the microscopic level with individual PTFE fibers). Finally, a fine scrim or mesh is bonded to the inner surface for comfort in 3 Layer (3L) fabrics. 2 Layer (2L) fabrics receive a separate fabric liner, while 2.5 Layer fabrics use an abbreviated pattern screened on the inner surface to save weight.

Modern waterproof/breathable fabrics have come a long way since the original GORE-TEX®, and most are extremely waterproof at any price point, but outstanding gains in breathability in the past few years have redefined the market in high exertion outerwear.

For more details visit:

http://www.evo.com/waterproof-ratings-and-breathability-guide.aspx

BACK

Performance Standards for Ballistic Resistance of Body Armor

Ammunitions used for protection differ invariably from country to country and region to region. Therefore, law enforcement agencies or para-military organizations have their own standards for evaluation of performance of armor to ensure that their armors protect them from their own weapons. There are many standards for testing of body armor in the world. Widely used and accepted are the US National Institute of Justice (NIJ) and the UK Home Office Scientific Development Branch (HOSDB – formerly the Police Scientific Development Branch (PSDB)). Many other countries have adapted these "models" by incorporation of the basic test methodologies with modification of the bullets that are required for test. NIJ Standard-0101.06 has specific performance standards for bullet resistant vests used by law enforcement. Personal body armor covered by this standard is classified into five types (IIA, II, IIIA, III, IV) by level of ballistic performance. This rates vests on the scale against penetration and also blunt trauma protection (deformation).

Testing of textile armor is done for (1) penetration resistance by bullets, and (2) for the impact energy transmitted to the wearer. The measurement of "backface signature," or transmitted impact energy, is done by shooting armor mounted in front of a backing material, typically oil-based modeling clay. Use of clay is done at a controlled temperature and verified for impact flow before testing. The vest is removed from the clay and the depth of the indentation in the clay is measured after the armor is impacted with the test bullet.

Other important standards, apart from NIJ and HOSDB law enforcement armor standards, include German Police TR-Technische Richtlinie, Draft ISO prEN ISO 14876, and Underwriters Laboratories (UL Standard 752).

For further details visit: http://en.wikipedia.org/wiki/Bulletproof_vest

BACK

Developing garment from corn husk

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Introduction:

Cornhusk shows great potential in providing large quantities of natural cellulose fibres with significant economic benefits than any other agricultural by-product. The economic feasibility of developing cornhusk as an alternative to conventional natural fibres also looks promising, especially when compared to the potential availability and production cost of other natural fibres. However, these benefits cannot be realized unless cornhusk fibres are suitable for various applications, especially for textile goods which demand fibres of high quality. At present corn husk is mostly treated as a waste and is disposed off by burning it. . Systemic work has not been carried out for utilization of this waste product till date. . Keeping this in mind an attempt has been made in this work to extract corn husk fibres from the husk and explore the possibility of using for textile purposes.

NITRA Study:

Corn husk as shown in Fig 1, was collected from fully mature sweet corn cobs from Aterna village in Panipat (Haryana). The variety taken was Syngenta Sugar-75(*Zea Mays Rugosa/ saccharata*). This variety of Sweet corn has long uniform cylindrical cobs, golden yellow kernels. The fresh husk is medium-dark green in colour and has a soft feel.

Fresh cornhusks **Dried cornhusks**

Fig. 1: Corn Husk fibre

The cornhusk was cleaned manually to remove the foreign matter impurities and rotten leaves. The husk was then cut into lengths ranging between 3 and5 inches as shown in Fig. 2.

Fig.2: Cleaning of cornhusks

The cut lengths were air dried at room temperature and stored in a properly ventilated room. The fibers were extracted by treating with an alkali (Fig. 3).

Fig. 3: Extracted corn husk fibre

The extracted fibre was spun in to yarn (3^s to 9^s) by blending with cotton and polyester. Fabrics and stitched garments made from these yarns are shown in the Fig 4.

The fabrics made out of this fibres are found to be suitable for making comfortable garments for winter (Blends of cornhusk with acrylic) and summer (blends of cornhusk with cotton and polyester) seasons as it has moisture content around 11%.

For further details please contact Head, R&D (Product Development), NITRA.

Fig.: 4 Garments out of Corn Husk Fibre

ACKNOWLEDGEMENT:

Authors are thankful to Ministry of Textiles, Govt. of India for sponsoring this project.

BACK

Sustainable Packtech Regulation in India

India and Bangladesh are the leading producers of jute in the world. India's jute products are predominantly used as packtech materials. Government of India supports this sector by regulating its use in packaging.

Cabinet Committee on Economic Affairs of India has recently approved the mandatory packaging regulation for the current jute year (July 2013-June 2014), according to yesterday's news release from Government of India. The general mandatory regulation stipulates that 90% of food grains produced and 20% of sugar produced have to be packed in jute bags. However, the regulation gives exemptions for the non-use of jute package for items such as export categorized sugar but not exported, sugar with vitamins and commodities that are exported. In general, jute packaging is stipulated for bags that weigh between 25 and 100 kilograms.

According to Government of India, this mandatory regulation will support 370,000 workers in jute and allied mills and 4 million farm families. Government of India emphasizes that the use of jute in packtech will protect the environment as jute is biodegradable and reusable fiber.

(Source: Seshadri Ramkumar, Texas Tech University, USA, Lubbock, USA, November 29, 2013)

BACK

Development of Wearable and Flexible Textile Battery

Smart textiles containing electronic materials have been talked about for more than a decade. The lack of textile characteristics such as drapability and wash durability has deterred the greater market penetration of electronic textiles.

New research endeavors are ongoing to overcome these practical difficulties. A team of scientists from Korea Advanced Institute of Science and Technology (KAIST) reports in a recent issue of Nanoletters, the advancements in textile battery structures which exhibit comparable electrochemical properties with metal foil cells and at the same time have features of textiles. KAIST scientists coated Nickel on to woven polyester fabrics using electroless deposition method. This approach enabled them to have good drapability or in other words folding-unfolding capability enhancing the wearability of such structures. These electronic textiles performed better than aluminum foiled batteries where the battery layer started to disintegrate after single folding and unfolding operation.

Textile structure which is three dimensional (3D) in nature seems to be the key in providing the necessary mechanical robustness and drapability unlike metal foils. The scientists report that 3D textile structures developed could withstand hundred mechanical folding and unfolding cycles. The new findings from the KAIST scientists show that the basic current collector structure, i.e. textile fabrics plays an important role in the development of wearable textile batteries. Additionally, the coating technique employed to provide electrochemical characteristics to base textiles also plays a significant part.

Although these new developments push electronic textiles to the next level, the field still offers significant challenges with regard to wider acceptability as day-to-day textile materials owing to cost and performance issues

(Source: By: Seshadri Ramkumar, Texas Tech University, USA, Lubbock, December 06, 2013)

BACK

Release of "Nonwoven Compendium" by Technicaltextile.net

Technicaltextile.net, an initiative of Fibre2Fashion, has planned to release a 'Nonwoven Compendium'. It will help professionals/entrepreneurs engaged in production of nonwovens, nonwoven converted products and nonwoven machineries. It will also cover information on trends – technologies & innovations in the nonwoven industry.

Technicaltextile.net will bring this 'Nonwoven Compendium' after having got worldwide recognition with release of two such compendiums earlier - 'Sustainability' and 'Machinery Year Book'.

Four global majors i.e. Lenzing, Reliance Industries Ltd, DILO and Truetzschler Nonwovens have confirmed their participation in the 'Nonwoven Compendium'.

Apart from these four worldwide known manufacturers, many other global organizations engaged in nonwovens have also shown a keen interest in participating in the Nonwoven Compendium.

Lenzing Group, a world market leader in the production of man-made cellulose fibers (Tencel and Lenzing Viscose fibers), is at the beginning of a long value chain in the nonwovens industry. According to Lenzing Group, Nonwoven Compendium will provide an excellent opportunity to approach existing and potential partners throughout the supply chain of nonwovens.

The Nonwoven Compendium would be focusing past, present & future in terms of trends, technologies & innovations; in almost all the nonwoven segments, viz., filtration, packaging, automotive, composites, construction, civil engineering, medical, home furnishing, hygiene, etc.

This compendium would serve as a ready reckoner that anyone related to nonwovens can 'Read, Refer & Preserve'. Its circulation is expected to more than 5000+ decision makers worldwide with greater emphasis on emerging hubs of South Asian countries like India, China, Bangladesh, etc. The online version will do even better and expected to attract more than one million visitors.

(Source: Global firms confirm participation in Nonwoven Compendium, Technical Textiles, January 13, 2014 - Global)

BACK

Self-powered Wearable Textiles for Advanced Health Monitoring

The research work is under progress where textile batteries can detect bodily fluids and generate power and use them.

United States National Science Foundation has sanctioned major funds to Mr. Peter Lillehoj, Assistant Professor of Mechanical Engineering at Michigan State University, East Lansing, MI for conducting research in this field.

The developed textile batteries will be able to carry out biomolecular detections. Such batteries will sense bodily fluids such as urine and sweat and these fluids will generate power to operate them.

National Science Foundation has informed that so far wearable textiles have focused on measuring physiological parameters such as heart rate. But the new textile batteries will be able to analyze bodily fluids for transforming health care.

{Source:Seshadri Ramkumar, Texas Tech University, USA (Lubbock, USA, February 06, 2014)}

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