



EXPO "SMART TEXTILES"

Abstandsgewirke, Airbag, Antimikrobielle Textilien, Automatik-Fallschirm, Bügelfreie Hemden, Büstenhalter (BH), Dreipunkt Sicherheitsgurt, Elastische Fasern, Epithelersatz, Faserverstärkte Kunststoffe, Feuerwehrschauch, Filtertextilien, Filzfreie Wolle, Flammhemmende Schutzbekleidung, Funktionstextilien, Garnherstellung, Geotextilien, Heißluftballon, Heizen und kühlen mit Textilien, Hochfeste Fasern, I-Wear, Jeans, Kleines Schwarzes, Klettverschluss, Konfektion, Leitfähige Textilien, Leuchttexilien, Lodenmantel, Membranbau, Membranen, Mikrostrukturierte & Superhydrophobe Textilien, Nähmaschine, Nähwirktechnik, Nanoausrüstung, Nass-Reinigungsverfahren, Plauener Spitze, Polyamid, Regeneratfasern, Schwammtuch, Schwer entflammbare Polyesterfasern, Sensitive Textil-Strukturen, Smart Labels, Strick - und Wirkmaschine, Synthetische Farbstoffe, Synthetisches Nahtmaterial, Teppichboden, Textilbewehrter Beton, Textildruck, Textile Depotstrukturen, Textile Fassaden-Systeme, Textile Implantate, Textile Schneekette, Textilien im Hoch - und Tiefbau, Transluzenter Beton, Trenchcoat, Tunnelfinisher, Umweltgerechte Textilveredelung, UV-Schutztextilien, Vliesstoffe, Vollautomatische Musterwebmaschine, Wassereinsparung mit Vliesstoffen, Wassergewinnung mit Textilien, Wundschnellverband Adhesive bandages, Airbag, Automatic pattern-making power loom, Brassiere (bra), Carpeting, Detergent, Drip-dry shirts, Elastic fibres, Fibre-reinforced plastics, Flame-retardant protective clothing, Flame-retardant polyester fibres, Fully automatic washing machine, Functional textiles, Geotextiles, Hot-air ballon, I-Wear, Jeans, Kite propulsion system, Membranes, Nano-finishes, Nonwovens, Plauen lace, Polyamide, Professional garment care, Ready-to-wear clothes, Sewing machine, Spacer fabrics, Stitch-bonding, Synthetic dyes, Synthetic suture material, Textile-reinforced concrete, Textile depots, Textile implants

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AUSSTELLUNG / EXPOSITION “SMART TEXTILES”

Anwendungsbereiche / Areas	Name / Name	Inhalt /Content	
Sport Sportswear and leisure wear	Jaqueline Jasmin	Falke-Strümpfe Falke-stockings Hemd Shirt	
Architektur / Bau Architecture / Construction	Raphael Sharie	Haus bauen / beleuchtet Building / illuminated	
Medizin Medicine	Jennifer Lorena	Silberstoff / Silver fabric Oberteil / Top	
IT / Informationstechnologie IT / Information technology	Alessa Katharina Julia	LED - Kleid / LED – dress	
Mode / Bekleidung Fashion and clothing	Marina Kim Bianca	T-Shirt mit integrierter Gitarre / T-Shirt with integrated guitar Hausschuhe mit Taschenlampe / Flashlight slippers	
Automobil Automobile	Therese Alexandra	Lichtleitfasern / Fibre optic Beschichtungsspray gegen Wasser, Öl, Schmutz / Lamination spray against water, oil, dirt	
Technikfolgenabschätzung Technological impact assessment	Deborah	Solarzelle / Solar cell Textilstruktur Nomex (Feuerwehr) / Fabric Nomex (Firefighters)	
Wellness	Hanni Luca Eileen	Milch / Milk Algen / Seacell	

Luccon Lightconcrete

by Rafael and Sharie

Translucent concrete can be considered one of the most beautiful, noble and mysterious product innovations in the last years. Translucent concrete cannot be described, one has to experience this mystical material in order to understand it.

LUCCON Lightconcrete is a combination of modern concrete and embedded fiber optic cables. Fiber upon fiber light is projected through the construction element – for example images beyond a wall appear pointwise or digitized on the opposite side, regardless if they are shadows, light, colors, projections or displays. The dimensions of the construction element are basically irrelevant with one exception: With increasing thickness the experienced image on the hidden side appears increasingly peculiar and strange.

Area of application

Design varieties

- Architectural décor stone
- Display cases
- Cabinets
- Advertising structures
- Display window structures

Inner and outer façade slabs

- With an anchor bolt
- With an undercut anchor
- Screwed on frontally to the substructure, each slab revisable
- Screwed onto substructure with terminal strip, each slab revisable
- Sliding element inserted into the substructure, each slab revisable



Automobile

by Therese & Alexandra

Water/ dirt-repellent textiles

There are different inventions of water and dirt repellent laminations

1. for example the using of the „lotus bloom“ because of her high self-cleaning ability
2. an the „easy-to-clean“ –effect
which is an effect caused by fat-repellent nanoparticles

and for example the using of special leather textiles which are also used for the interior equipment of cars

Fleece textiles

are used for a comfortable acoustic in the interior space of the car because of their acoustic insulation

another benefit of fleece textiles are their resistance and the fact that they are easy to adapt

fleece textiles are also used for heat isolation

Special textiles to clean the air

These textiles have a kind of catalyst ability which clean the air in the interior space of the car

Moreover there are some special textiles which ejects a kind of perfume blisters for a good smell in the inside of the car

„Crash-absorption“

There are some textiles called „smart textiles“ which check the vital dates of the driver

for example:

- blood pressure
- pulse
- heart rate

Another invention for crash-absorption are „shiny textiles“.

These textiles are used as an emergency signal in case of a crash.



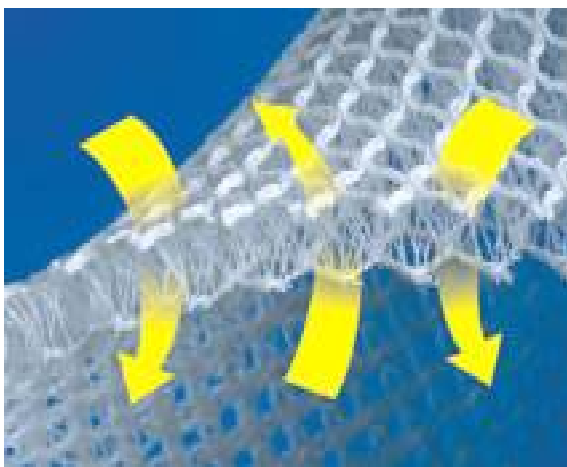
Special lamination with nanoparticles



„Lotus-bloom-effect“



Fleece textiles for a good adaption



Textiles with a catalyst ability



Seat with shiny textiles

Medical textiles

by Jennifer and Lorena

The **medical textiles** are used for prevention, diagnosis, monitoring and for care towards the patients. But medical textiles are also used in form of implants or sutural-material.

To have a progress in future, a close cooperation between medical scientists, biologists and textile engineers is necessary.

There are many examples in the medical sector which were already realized nowadays.

1) Implants in form of textiles are much closer to the human body than a metal one. The standard treatment for hernia inguinal is the use of hernia nets.

2) There is a special pyjama for babies, equipped with a sensor which can save the babies life.



3) Warp knitted blood vessels are made of polyester. They replace non-functional vessels. They are very strong, yet lightweight, flexible and soft.

4) Another convenient invention is a T-shirt which takes the measurement of the heartbeat, pulse and blood pressure from a vulnerable person. In an emergency it should alarm the doctor.

5) Moreover there is a special underwear → 100 percent silver helps allergic persons against affections of the skin.

6) Similar there are clothes which transports drugs, ointment or vitamins to the human body. E.g. clothing which supports diabetics with insulin.

7) A doctor's overall works with an included keyboard in the sleeve. So the doctor can record the data of a patient while the examination. And that information gets to the main computer. It saves time.



Sportswear

by Jaqueline and Jasmin

Important conditions for sport textiles

- Zippers are water-repellent
- less seams organize for a small wind permeability
- the seams are processed so that the clothes is completely waterproof
- maximum air permeability, cold protection
- regulation of the humidity

First example:



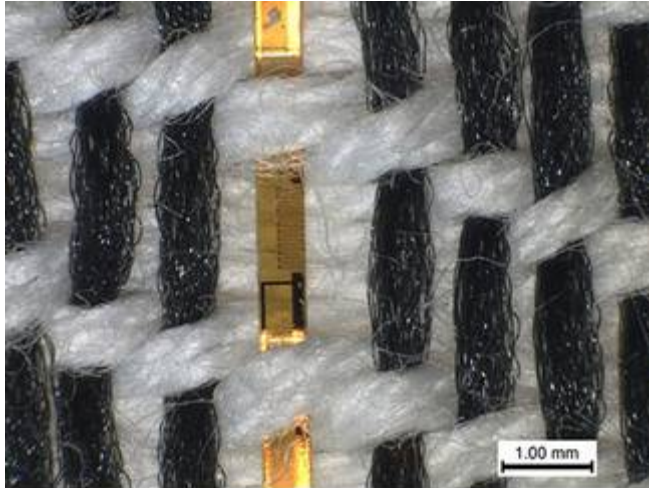
- two New Zealand companies have developed a merino shirt that promises to revolutionize the way athletes measure, track and share information about their performance
- this smart fabric, in combination with specialized electronics can measure, transmit and record key athletic performance attributes such as heart rate, respiration rate, skin temperature and posture
- after training the athletes uncouple the transmitter from the harness, places it in a cradle and uses Sputnik software to upload the collected data to a Facebook website and show to friends the athletic capacity
- Second example:



- this is a shoe pod
- a piece of fabric with sensors is placed in the instep of a person's shoe

- the sensors are then used to measure the size of a person's step and who each foot falls
- the shoe pod can also measure the runner's level of speed and data on posture, style and technique

Third example:



Smart textiles: the woven plastic fibers with integrated temperature sensors
Photo: K. Cherenack / ETH Zurich



- textile innovator textronics has been awarded a breakthrough patent
- textronics has found a way to measure the temperature of your body
- this textile base electrodes are able to record electrical body data and is now approved by the patent office
- this is a big step in biofeedback tech
- this new tech is being established as highly accurate as well
- say good bye to big sensors
- there are sensors in the clothes and you don't see them

Examples for collections: - sensors have to be resist

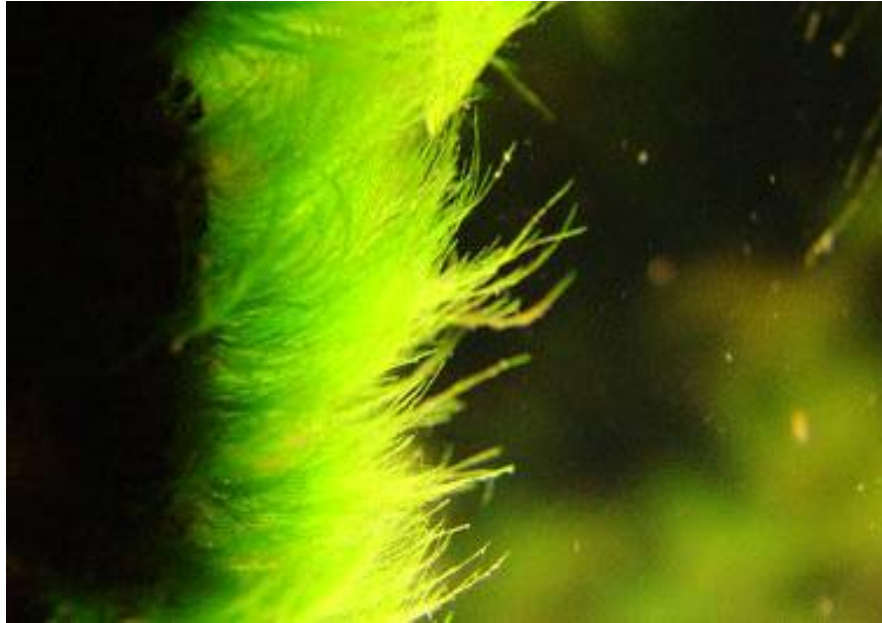
Have to be resistant against external influences

Swimmers: sensors have to be waterproof

Wellness

by Hanni, Eileen, Luca

Milk and Seacell



Milk

Milk has been a beauty product in our world since the time of Cleopatra.

Today, we are transforming a beauty product into a product to wear! Many people are allergic to synthetic materials, which makes it interesting to create some new kind of textile.

One new label coming up developing this idea is called "two square meter".

(www.twosquaremeter.com Name: Has its idea from our skin. In average we have about two square meters of skin.)

But there are also other designers who are working on this topic, for example Anke Domaske (Picture).

Her label is called Qmilch.

(www.qmilk.eu Name: q, loudly pronounced means cow in german, therefor cowmilk.)

Back to the use of textiles based on milk proteins. Logically you cannot just get some milk from a cow and wear it. First you will have to dewater it, to get the proteins from the milk. With that you can make threads, but only as mixture with other components. For example Lenpur (= cultivated wood fibre).

The effect of milktextiles are a refreshed skin, gives fat to your skin, neutralizes bad smell, cools you down and keeps you warm and also its breath active. It can be used for sports wear, babywear or just as a basic clothing for people with sensitive skin.



Designer and biologist Anke Domaske

SeaCell

Seacell has also been developed by different designers. As mentioned above, the label twosquaremeters, and also Zimmer AG. But Zimmer AG is more specialized on different kind of medical use in clothes, so that patients have to swallow less pills and just wear their medicine.

The effects of Seacell textile is similar to the milk textile, but it has the bonus of blocking infections (anti-inflummatary effect). Also SeaCell, has to be mixed with different materials, for example Cotton, or Lycra.

First use of SeaCells was in the cosmetic area too. Especially in the Thalassotherapy:

Thalassotherapy (from the Greek word thalassa, meaning "sea") is the unproven medical use of seawater as a form of therapy

As usual there are also some critics. They say that the postive effect of SeaCell is not been proved. (<http://www.netdokter.de/News/Algen-Textilien-Gesundheits-1082604.html>)

Similarities of milk and seacell textiles

Either SeaCell- but also milktexiles are easy to handle. They are both washable and based on natural sources. It is handy for people with allergies and sensitive skin.

Both had their first use in the cosmetical area.

(Cleoptra and Thalassotherapy)

BUT: to have a useful effect of both materials, the clothes should sit tight on the skin so that it can work in its full length! Therefore the idea might be more developed in tights or underwear.

Sources:

<http://www.lenpur.net/home.html> Lenpur Erklärung

<http://www.twosquaremeter.com/milchalge/alge.html> Designerseite

<http://www.qmilk.eu/> Designer mit Bioausbildung

<http://www.welt.de/wirtschaft/karriere/junge-profis/article13415070/Diese-Frau-schneidert-Kleider-aus-Milch.html>

Bild von QMilch

http://www.textbites.de/medtex_i.htm Algen

<http://de.wikipedia.org/wiki/Thalasso> Thalassotherapie

<http://www.netdoktor.de/News/Algen-Textilien-Gesundheits-1082604.html> Algen

(Gegenteil)

<http://www.psoriasis-netz.de/themen/hautpflege/algenkleidung.html> Algen (Details über Zimmer AG)

<http://www.aquarianer.ch/magazin/wp-content/uploads/2010/10/algen.jpg> Titelbild Alge

http://www.ropapharm.de/images/ropa_milch.jpg Titelbild Milch

http://www.smartfiber.de/index.php?option=com_content&view=article&id=44&Itemid=81&lang=de Algen Kleidung Bilder

<http://www.made-in-china.com/showroom/healthynewfabric/product-detailhMIQbweFSvkU/China-Milk-Fabric-with-20-Milk-Protein-80-Cotton-GY-1049-GY-2272-.html> Milch Protein Stoff Bild

Baby Wear made of cotton and seacell



Clothing for babies and adults



Socks made of seacell



Milk protein textile

Fashion in general

by Kim, Marina, Bianca

We have some examples for you which show how great technics are when they are integrated in textiles.

Our first example, are house shoes with integrated lamps.

They look funny but they are very practical!

In the night when you want to go to the kitchen or to the toilet, you don't need to turn on the light and wake up somebody; you put on your shoes and they light you way!



Our second example is a solar-bikini.

The designer sewed photovoltaic stripes with a conductive thread together.

In the bikini a USB connection is integrated, so you can load up your iPod or your mobile phone.



Our last example is a T-Shirt with an integrated electric guitar.

When you buy this Shirt you also get a guitar-amplifier and a plectrum.

This T-Shirt operates really like a real guitar you can watch a video on youtube.



Technologies, consequences, appraisal

by Christine and Deborah

No matter what kind of new and smart textiles we have in front of us, there will always be some kind of advantage or disadvantage, benefit or risk coming with them. We have to keep in mind that we can't predict their aftermath, although they are indeed created by human beings. Looking at them more closely makes you wonder: How will smart textiles influence our health, our future, our children, our basic human instincts, our nature?

Some examples:

Solar jacket: integrated solar cells charge your electronic devices (like a cell phone or MP3 player) cables, adapters are integrated in the jacket and fastened with conductive push buttons the sleeve serves as the control panel, the zipper "hides" a microphone, the hood contains washable headphones

benefit: all your electronic devices in one jacket, your hands are free, no extra charging unit necessary
risks/problems: hearing damages, addiction problems, lack of concentration.



Romper suit: an integrated circuit board in the romper suit makes electrodes attached on the babies body unnecessary (used for preterm infants)

benefit: parents could take their babies home much earlier
risks: the circuit board could break down and the baby could die, electrical oscillations could have a negative influence on the baby's health



Textilstructure Nomex:

it protects against heat and is used by the fire brigade. The danger is that you notice too late how hot and close the fire already is. So, you can't trust your instincts anymore.

benefit: a safer and longer stay in the fire

risks: the firemen could notice too late if the fire is approaching



Internet Shopping:

it is faster, easier and has a larger selection.

However, we omit the social contact and a good professional consulting service.

benefit: promptitude, simplicity, dimension

risks/problem: no social contact, less places of employment



In the end, we have to decide for ourselves how we handle the upcoming changes caused by new inventions. Only if we are really aware what they will mean for us, we will benefit from them.